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ABSTRACT

A study investigated those transitional patterns that account for substantial numbers of young people moving from secondary education to employment. Data came from the National Longitudinal Study of the High School Class of 1972; and the National Longitudinal Survey of Labor Market Experience, Youth Cohort, including high school transcripts of a subsample. Large numbers of students began postsecondary education but did not earn degrees. Often the interruption was followed by going to work. The availability of nearby community colleges led to higher attendance. Socioeconomic status, gender, and race were related to choice of pathway. Choices were also influenced by significant others, particularly parents and close friends. Few students cited high school teachers and counselors as important influences. The choice of postsecondary education as a pathway was related to the high school experience; the higher the high school achievement, the higher the educational level the student generally completed. Outcomes of the nonpostsecondary path were predominantly lower-skilled craft and service jobs. For vocational students, postsecondary work tended to lead to professional/technical and craft occupations. On-the-job training was the predominant kind of postsecondary education. Post-high school training, incomplete pathways, and transitional decisionmaking were recommended for policy attention. (YLB)

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TRANSITION PATTERNS BETWEEN EDUCATION AND WORK

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FOREWORD

The variety of ways by which young people make the transition from secondary education to employment as a major activity is an important topic because the routes followed may not be of equal benefit. Furthermore, there has been little previous work that identifies and describes just what patterns of transition are commonly followed. The purpose of this study was to find those patterns that account for substantial numbers of young people in the transition process. It also examined demographic and other characteristics to find those that were associated with the selection of or assignment to different routes. Initial consideration is given to some of the consequences of alternative patterns, although major study on this issue is planned for future work based upon the identified patterns. This study was intended for other researchers as well as the planned work. It is anticipated that they will use it to identify empirical patterns of transition as elements in the antecedents of subsequent career activity. Although the findings at this stage of the research are preliminary, some consideration by policymakers is also warranted.

The data used in the study came from two sources. The National Longitudinal Study of the High School Class of 1972, funded by the National Center for Education Statistics, was the major source. The combined data from the National Longitudinal Survey of Labor Market Experience, Youth Cohort, and the high school transcripts of a subsample of this survey were also used.

The National Center for Research in Vocational Education extends its appreciation to the U.S. Department of Education, Office of Vocational and Adult Education, which funded the National Center's analyses of these data, and the effort to collect the transcripts. The continuing study planned on this issue is made possible through this source.

This project was conducted in the Evaluation and Policy Division of the National Center under the direction of N. L. McCaslin, Associate Director. Many people made significant contributions in the course of its completion. We wish to thank project staff Paul B. Campbell, Project Director, and John Gardner, Patricia Seitz, and Paul Winterstein for their work in conducting the study and preparing the report.

Luther Otto of the Boystown Center for the Study of Youth Development provided a helpful critique, as did Larry Hotchkiss and Juliet Miller of the National Center. Bernice DeHart, with painstaking and thoughtful work produced the typed manuscript,

the extensive tables, and incorporated the many revisions. Editing was ably provided by Michael Wonacott.

Robert E. Taylor
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EXECUTIVE SUMMARY

This study was undertaken and this report was prepared as a preliminary and empirical identification of the various ways that people accomplish the transition through education to work. It is intended for researchers in education, economics, sociology, and other disciplines, as a piece of groundwork that will assist them in capturing a larger part of the potentially relevant elements that define the transition process.

A transition pathway is a concept of the progression beginning with entry into high school and continuing until work is established as the major activity. These pathways involve periodic choice and can be seen as proceeding in stages. The first stage begins with the selection among high school curricula, a time at which many students make long-range decisions. The next begins for most at graduation with the decision to go on to postsecondary education, and ends with a full-time job. For many, the pathway is not straight, but dotted with delays, interruptions, failure to complete, and new decisions.

The progress into the labor market involves some of the most meaningful choices individuals make, choices that are likely to have implications for the rest of their lives. Their routes are diverse--partly chosen, partly imposed from outside. Identifying and describing both the common pathways and those who tend to follow them were the purpose of this study.

While more remains to be done on the subject of the impact of each pathway, three kinds of impact were addressed. How successful were those who followed each pathway in gaining credentials? Into what occupations did each pathway lead? What are the sorting effects? Of great importance for policy considerations is the first of these; large numbers of youth begin postsecondary education but do not get degrees. Often the interruption is followed by going to work, although whether the young person leaves school for financial or academic reasons is not clear. It is clear, however, that interrupting education exclusively to have a family is no longer a frequent pattern; for women and men alike, patterns of interruption are similar.

Numerous factors seem to influence choice of pathways. One is opportunity; the availability of nearby community colleges leads to higher attendance. In considering opportunity, problems of equity cannot be ignored. The socioeconomic status (SES) of the student's family is related to choice of pathway; most high SES students at least begin postsecondary school; those from low SES families are much less likely to do so. Students from high SES backgrounds are more likely to attend four-year colleges or universities; those from middle SES backgrounds are more likely to attend community colleges or vocational schools. Both gender

and race seem to play distinct roles although the relationship of pathway to race is attributable primarily to the relationship between race and family SES. Women are still less likely to obtain at least some postsecondary education than men. Blacks and Hispanics of either gender are much less likely to follow pathways toward four-year degrees.

Choices are also influenced by significant others, in particular parents and close friends. Relatives outside the family and other adults are also influential. However--a finding that has significance for policymakers--relatively few students cite their high school teachers, and even fewer their counselors, as important influences.

The choice of postsecondary education as a pathway is related to the high school experience; the higher the high school achievement, the higher the educational level the student will probably complete. Curriculum is reflected in the pathway. Vocational students who continue their education are most likely to attend postsecondary vocational schools.

Where pathways lead is obviously an important question, and one to which this study has only partial answers, since the database contains information only for the early career. The available information confirms some common expectations. For instance, for vocational students, postsecondary work tends to lead to professional/technical and craft occupations. Also confirmed here is the belief that students who stop their education after high school are likely to work in less skilled craft and service jobs.

While educational pathways vary widely, kinds of postsecondary training are dominated by one form. On-the-job training is five times more common than any other form of training. Unfortunately, it is reported by only 12 percent of the population, and less often by those who had no postsecondary schooling, and who may be the ones who need it most.

These findings are based on a definition of pathways in terms of four concepts that seemed to cover the important dimensions of the pathways of transition: delay, interruptions, degree, and sequence. Delay in entering a postsecondary school was found to be significant: three-fourths of those who ever attended postsecondary institutions did so without delay. For them, interruption was rather frequent--a finding with significance, since students with even one interruption were unlikely to earn a degree when they returned. Sequence, the choice of postsecondary school or schools, could also have significance for the outcome. When sequence reflects a lack of clear goals, or the presence of obstacles, the student is less likely to earn a degree.

Fewer than half of those who begin a pathway toward a degree complete it. This may be a significant problem on two counts. First, credentials are often important in obtaining work. Second, leaving this pathway may well represent defeat for the young person, with possible consequences both in human terms and in the future career.

Recommendations

Although this work is preliminary, some findings emerge that suggest the directions in which policy might move. These directions are called to the attention of policymakers. Policy's role in the issues of choice that surround the pathways of transition must be governed by the social commitment to maximum freedom of choice, and choice is a central issue in the question of pathways of transition. In a time when educational resources are increasingly scarce, policy must address itself to the question of how to help young adults make effective, meaningful choices. Some suggestions are given below.

- At all levels of government, new policies are needed to help that one-fifth of all young working adults who receive little or no education or training after high school. This is particularly important because these individuals report that they have the least sense of control over their own lives, and that they hold the least stable and least rewarding kinds of jobs. Through expansion of their skills, and an improved sense of efficacy, these individuals can make an increased contribution to society as a whole.

- Policy should consider ways to reduce the incidence of false starts and incomplete degrees. While the consequences of dropping out before completion are not yet fully determined, there is evidence that credentials are significant in gaining jobs and in advancing in a career, and that inability to remain on an educational pathway can have consequences for self-esteem as well.

- New policies are needed to increase the role of the high school counseling system in students' choice of pathways. Few students report being influenced by counselors; ideally, the counseling system can help students both in gaining information about their choices and in using that information well to make pathway decisions.

- Appropriate methods of influencing student choice should be considered in light of this research. Insofar as parents are an important influence, information can be directed at them; since peer groups are also significant, strategies might be developed to influence peer leaders.

- Policy, in particular federal policy, should encourage further research into the vital questions surrounding the pathways of transition. We do not know why many young people delay decisions in apparently personally expensive ways, fail to complete courses started, or do not use counseling resources. We also do not know the outcomes of most transition pathways.

- Policy should attack the problems of inequity from a variety of perspectives. As far as transition pathways are concerned, inequalities are still associated with gender, race, ethnic origin, and socioeconomic status.

CHAPTER 1

THE STUDY CONTEXT

Pathways of Transition

In a society that has a tradition of and commitment to maximum freedom of choice, the role of policymaking becomes one of encouraging individuals to choose a course of action that will lead efficiently to a desired goal or outcome. The transition through school to work is a process in which each individual faces many choices. Especially when educational resources are becoming increasingly scarce, finding and encouraging more efficient ways of making an effective transition become a matter of concern for policymakers. However, the concern for efficiency must be balanced against a concern for protecting freedom of choice, a concern for providing meaningful and informed choices to those who have lacked them in the past, and a concern for balancing individual needs with societal needs.

Policymakers need to be aware of the influences that impinge upon the choices required at the many points of the transition pathway. Otherwise, policies may create unintended negative consequences or fail to influence adequately the choices necessary to move through an efficient pathway. Furthermore, policymakers should be aware of the actual consequences of alternative pathways so that the appropriate, effective, and efficient pathways may be encouraged.

The objective of this study is to add information to the base of available knowledge that reflects these concerns. It was undertaken to provide researchers with a working typology of dynamic patterns that people follow during the transition, and as a preliminary step leading to a more detailed analysis of national longitudinal data. Such analysis will be the next phase in the authors' continuing study of the labor market effects of vocational education. Although the ultimate objective is to provide information for policymakers, the results of this first phase of the study are partial and tentative.

The Nature of Transition

The concept of pathways of transition through education to work may be compared to a network of trails in a park. There are a variety of ways to get from one side of the park to the other; there are many forks and branches; some paths are more difficult, even dangerous, than others; some require a greater investment of time, without necessarily providing a greater return of enjoyment. There are also human factors in selecting the alternate pathways. Some may wish to wander for awhile, with destination

secondary; others may have a certain destination--a unique park feature--in mind. Some may hurry to get through to the opposite side; others may be purposeful but unhurried. Some may only think they know the way, the outcome of their choice; others may be genuinely informed. Finally, some--reckless or independent--may try to make their own paths.

The pathways people follow through school to work are likewise diverse. They are imposed in part by the structure of the society--the available institutions, the traditions, the stereotypes. They are chosen in part as a result of the inclination, the information (or lack of it), the purposefulness (or lack of it), of the individual. The time spent, the choices and changes, and the consequences--all vary.

The pathways of transition are characterized by four major areas of consideration. These are the processes of education, the entry portal jobs, the choices among the processes and jobs, and the factors that influence those choices. The process of education varies through the high school years in the curriculum followed, in the quality of the program, and in the investment of the individual in the educational activity. It varies even more in the postsecondary years--by program, by type of institution, by whether a credential is earned, and by length of time involved. These variations lead eventually, and sometimes repetitively, to entry portal jobs.

One way to characterize the educational processes within the transition pathways is by their relative continuity or discontinuity. Some writers have argued that interruptions do not interfere with program completion up to the point of an entry portal job (e.g., Robertshaw and Wolfle 1980). The reduced likelihood of completing a four-year degree reported by Breneman and Nelson (1981) for those enrolling in two-year colleges suggests, however, a possible negative effect of interruptions or changes of institution. This characteristic should be considered if one attempts to understand the nature of transitions.

The alternatives among educational processes, and ultimately jobs, involving a choice. Choice depends upon available options, and upon personal preferences, individual circumstances, and community context. There are at least two schools of thought regarding the way choices are made. Those who follow the premises of human capital theory assume that humans are rational beings who will make the choices that maximize their economic well-being (e.g., Dresch and Waldenberg 1978, Olsen, White, and Shefrin 1979). Other writers, operating from a counseling perspective, describe choice making as an nonrational behavior (e.g., Krumboltz 1983). From either point of view the conditions present at the time of choice and prior to the choice will have potential impact on the choice. From the rational point of view current choice also depends upon those conditions anticipated in

the future. Thus, these present and prior conditions must be taken into account in explaining which pathways are followed. In sum, then, a transition pathway is a progression of events beginning with the choice of a curriculum in high school and following it with or without further changes up to the time of graduation. At this point the pathway continues through another choice--work, postsecondary education of one of the many alternatives, or some form of delayed decision. It continues on from this point, with many potentials for change, usually until work becomes the established major activity.

The general model used for this study is shown in figure 1. It emphasizes the transition that occurs through high school and postsecondary education. (The next phase of the study will direct its attention primarily to the labor market and nonlabor market effects of the transition patterns.) Examples of the transition patterns are shown in figure 2.

Research Strategy

The current phase of this research followed six steps. First, to explicate the model just outlined we identified eight conceptual elements that would describe the transition patterns. Second, we consulted the literature that bore on the issue of transition from high school to career employment. We found that, although various segments of the pathways had been considered separately before, there existed no integrated analysis of who followed specific entire pathways and with what outcomes. Third, we examined empirically the degree of overlap and differentiation among the pathway elements, seeking the most parsimonious combination of elements that retained the distinctions our research and literature review led us to expect would be important for later assessment of outcomes. Fourth, we consulted the literature on the determinants of choices among segments of the pathways. This review of four principal theoretical viewpoints concerning postsecondary educational choices provided us with a list of variables that would help both to identify who followed which pathways and to suggest tentative explanations for their choices. Fifth, we took an initial look at the relationship between pathway frequency and those variables that we anticipated would be related to pathway choice. Sixth and finally, to gain insight into how useful our specifications of patterns would be in subsequent research, we considered three outcome indicators and their relationship to pathway followed. The empirical work performed within the fifth and sixth steps was exploratory rather than exhaustive. Our goal was to lay the groundwork for the next phase of the research by covering lightly a broad range of possible influences on pathway choice rather than by examining a few influences intensively. Thus, that empirical work was less rigorous than would be normally applied to test a small number of sharply defined hypotheses.

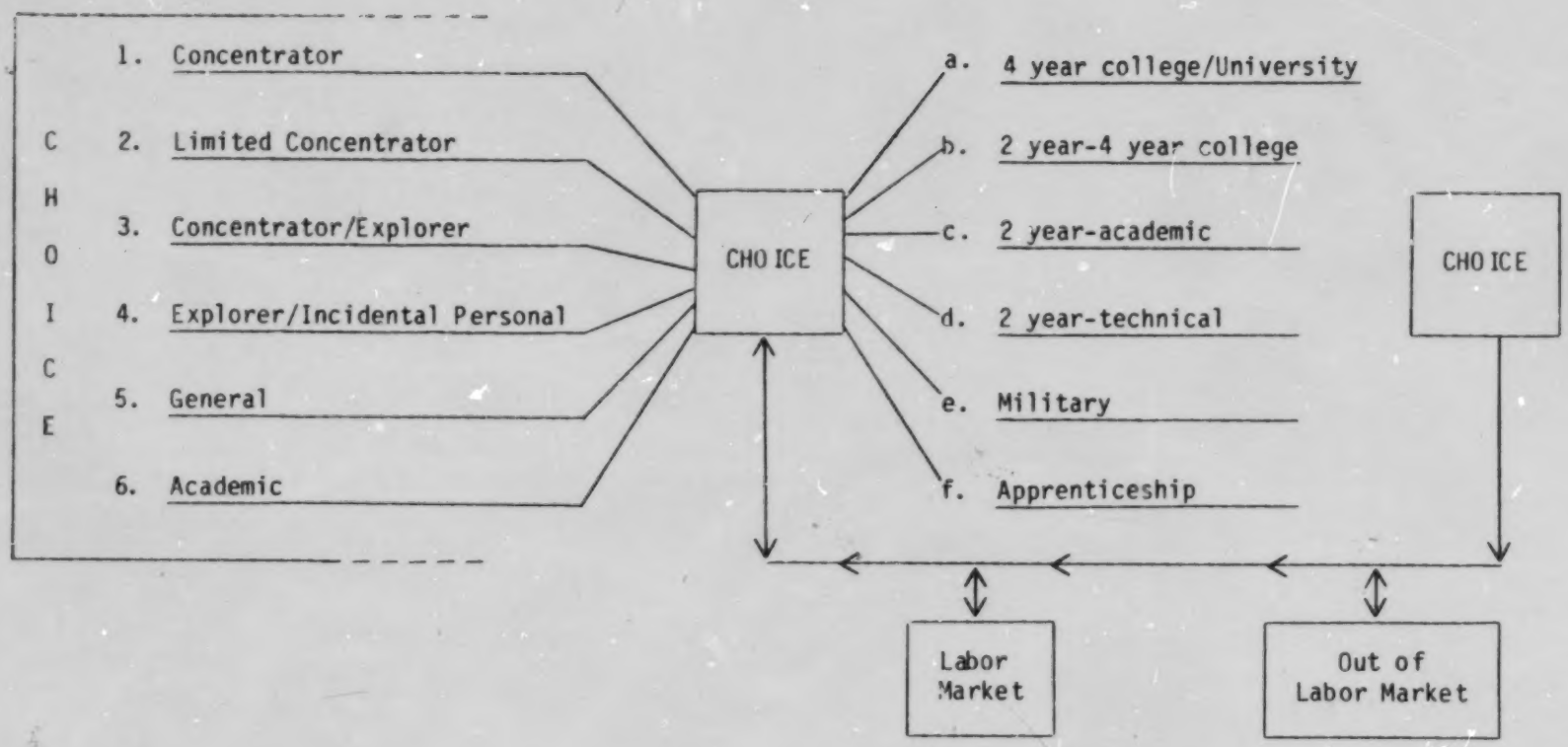

Figure 1. Examples of transition path alternatives and elements

* Path 1-d-LM (Concentrator-technical school-labor market)

Path 3-e-LM-d-LM (Concentrator/explorer-military-labor market-technical school-labor market)

Path 6-LM-a-LM (Academic-labor market-4-year college/U-labor market)

* Path 6-a-LM (Academic-4-year college/U-labor market)

* Path 5-LM (General-labor market)

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*Known to be frequent paths from previous research

Figure 2. Examples of pathways

Conceptual elements that had potential for differentiating patterns of transition were first selected and operationally defined. Eight elements--delay, interruption, sequence, degree, years, intensity, changes of school, and postdegree enrollment--were identified. They are presented next, with a brief description of their operating definitions.

The normal pattern for continuous schooling would have a student graduate from high school in May or June and begin postsecondary education in the fall (by October in the Class of '72). Respondents whose first postsecondary education begins later than October 1972 experienced a delay.

An interruption occurs if the student begins attending a postsecondary institution, spends the major part or all of the next year with no schooling, and then returns to some postsecondary institution (not necessarily the same institution, type of institution, or field of study). Although in most cases an interruption lasts for at least a year, the algorithm used will identify interruptions that could be as short as five months for students who follow nontraditional attendance patterns (such as attending summer session, not attending fall term, resuming education in the winter or spring term). Only a very few students in this sample might have such abnormal plans that they would be classified here as having an interruption when they would have denied it if asked directly.

The concept of sequence reflects the order and variety of postsecondary attendance. Some students will attend the same type of institution for all of their postsecondary schooling. Others will attend a variety of institutions. For those students attending more than one type of institution, it seems possible to distinguish purposeful combinations and sequences of institutions from combinations and sequences that lack direction or coherence. Four types of institutions are identified: vocational schools, two-year academic institutions, four-year colleges or universities, and graduate or professional schools. Attendance at only one type of institution is identified and distinguished from attendance at any other type of institution. Attendance at a two-year academic institution followed by attendance at a four-year college or university, or attendance at a vocational school followed by attendance at either a two-year academic institution or a four-year college or university is classified as progression. Such progressions presumably represent a purposeful sequence of advancement for the respondent. In contrast, attendance at a four-year college followed by a vocational school or a two-year academic institution appears less likely to be purposeful. Such a sequence is identified here as a regression. Students who follow a regression sequence may have failed in the academic institution, or they may have learned to their benefit that academic postsecondary institutions are not helpful in meeting their goals. If that learning is occurring, then the

regression sequence may be constructive for that individual. From the social point of view, however, a regression sequence is usually inefficient and could probably be avoided with better counseling and guidance during high school. Similarly lacking in clear purpose is the sequence labeled here as "mixed," in which a person has attended at least two different types of institutions, but in a pattern that fits neither the progression nor the regression sequence. An example would be a student who starts at a university, leaves to attend a two-year academic institution, and then returns to the same or another university. Finally, some respondents attended more than one type of institution at a time, and others attended at least one institution whose type was not clearly identified. These respondents are classified as having an indeterminate sequence.

Degree provides at least a broad measure of achievement. Three types of postsecondary degrees are identified for constructing this concept: vocational, two-year academic, and bachelor's and advanced degrees. Respondents with a single degree are classified according to that degree. Four combinations of degrees are also recognized: vocational and bachelor's, two-year academic and bachelor's, vocational and two-year academic, and other combinations.

The concept of postdegree enrollment allows identification of those respondents who reported being enrolled in a postsecondary institution at some time after they received their last degree. It could indicate any one of several kinds of activities. The respondents could be pursuing a higher-level course of study for a higher degree or they may be taking some courses without expecting to earn another degree. This concept was used to differentiate among those who acquired four-year degrees.

Research on Pathway Segments

These elements that are involved in the pathways have been treated in a considerable body of literature, but we have been unable to find a study that examines the pathways as a unit, from the time of the first curriculum choice to the point of entry into a relatively permanent career position. There are, however, identifiable segments into which the elements are combined, and about which something is known.

Secondary segments. The first segment of the pathway covers the high school years. The initial choice in this segment concerns the selection of high school curriculum. Many exogeneous variables may influence this choice. They include race, sex, parents' socioeconomic status, initial perception of the labor market, available options, and other environmental circumstances. These conditions and the personal interactions of the individual

with them result in a choice among the academic, the general, and the vocational curricula.

These terms are not, however, easily defined. A study by Campbell, Orth, and Seitz (1981) identified five kinds of participation in vocational curriculum, independent of the differing areas of specialization (e.g., agriculture, trade and industry). The database for this study was the National Longitudinal Survey of Labor Market Experience--Youth Cohort (NLS Youth), supplemented by the high school transcripts of those respondents who had graduated from high school prior to the initiation of the study. The study used concepts of intensity, continuity, proximity, diversity, and supportive diversity to characterize and distinguish among the patterns.

Intensity was defined as the number of credits earned within a vocational specialty. This definition represented varying opportunity to accumulate knowledge and skills in the specialty area. Continuity was defined as the number of years a particular specialty was pursued. It was based upon the premise that continuous exposure to and use of a body of knowledge or set of skills would result in a greater degree of internalization than sporadic exposure or intense but episodic crash programs. Proximity was defined as the adjacency of the training to its use in paid employment. Programs of specialization studied in both years immediately prior to graduation were scored highest on this concept. Those studied in the last year but not the previous year were ranked next highest, and those studied up to but not including the last year received a lower ranking. Diversity was defined as the number of different specialty areas a student sampled. This concept permitted differentiation among students who developed a specialty and students with similar credits accumulated who did not. The possibility of transferable skills was addressed by the concept of supportive diversity. This concept was defined as credits earned in a specialty other than the major specialty but judged to be useful in the application of the major specialty.

Based on the credits (Carnegie credit units) and the pattern of course taking shown in the transcripts, scores on each concept were assigned to each individual. A tentative set of patterns of participation in vocational education was hypothesized, and then tested through the application of cluster analysis techniques in a cross-validation procedure. With minor adjustments and refinements, a set of ideal profiles of scores was produced that identified differentially five patterns of participation.

The patterns were named Concentrators, Limited Concentrators, Concentrator/Explorers, Explorers, and Incidental/Personals. As the names imply, these patterns reflect decreasing levels of involvement with the vocational curriculum in high school. The first three levels can be expected to produce

specific skills related to classes of jobs in the specialty area pursued. They differ primarily on the intensity with which the specialty was followed and on whether it was followed until the end of the high school experience. The Explorers, on the other hand, did not develop specialties, but sampled widely across the available vocational courses. The Incidental/Personal group appeared to take one or two courses for reasons other than developing specialty-related job skills.

In addition to these descriptions of vocational curriculum patterns, Campbell and Seitz completed some related analyses of academic or college preparatory courses. Approximately 20 percent of the NLS Youth high school graduates follow a pattern of study that could be designated academic. It includes four units of English, three units of math, two units of science, two units of social science, and sometimes two units of a foreign language. There is a modest overlap between the academic pattern and the vocational patterns. Six percent of the Concentrators also qualify as academic by these criteria, as do 12 percent of the Limited Concentrators and 9 percent of the Concentrator/Explorers. Among those with the lowest level of vocational concentration, the Incidental/Personal group, 26 percent are academic, and among those without any vocational credits 33 percent meet the criteria.

These two studies provide a fairly rigorous way of classifying the high school segment of the transition pathways into differing elements with possibly differing outcomes. They also may lead into differing elements in the postsecondary segment of the pathways, thus reducing the total number of possible pathways that are actually used by young people in the overall period of transition.

Postsecondary segments. Although some high school graduates move directly to entry portal jobs or to other segments of the labor market, a majority engage in some form of postsecondary education (Campbell, Gardner, and Seitz 1982). A transcript-based content-specific analysis of these patterns is not available, however. The literature contains a number of studies that deal with movement through the postsecondary options. Usually they are concerned with choices among kinds of institutions and with the fundamental choice to attend or not to attend. Representative studies are those of Breneman and Nelson (1981), Hyde (1982), and Nolfi et al. (1978).

The report by Breneman and Nelson (1981) concerning the effectiveness of one particular set of pathways--that which leads through community colleges--offers a good example of the need for a comprehensive and unified treatment of the various pathways. In an analysis of the National Longitudinal Study of the High School Class of 1972 (Class of '72) data through the third follow-up (completed in 1977), Breneman and Nelson concluded that

attendance as a freshman at a community college, as compared to attendance as a freshman at a university or four-year college, is associated with an 11 percent lower probability of attaining a bachelor's degree, even when the analysis is restricted to respondents who aspired to at least a bachelor's degree. They also found that compared to university or college attendance, community college attendance is associated with lower occupational status among respondents who are employed full-time. They infer from the lower current occupational status that future earnings also will be lower, even though current earnings are not. These and other results have led to considerable discussion of the appropriate role for community colleges to play in the education and training process.

What has been lost in the controversy over these findings is an awareness of the limitations of the study, some of which Breneman and Nelson acknowledge at the beginning of their discussion of these results. They acknowledge that their results may be generalizable only to a limited number of students. In part this limited applicability of results stems from the use of data only through the third follow-up. The identification of respondents as participants in community colleges, university/four-year colleges, or no college at all is based not on the full pathway that respondents follow through postsecondary education but only on their enrollment in October 1972. Later enrollments or transfers are disregarded because they would usually lead to degrees that would be awarded after 1976, at a time later than that covered by the third follow-up.

Another limitation of the study by Breneman and Nelson is that their analyses of labor market outcomes are confined to short-term effects even though longer-term effects may be quite different. Mertens and Gardner (1981) found that in the longer term, in comparison to having no postsecondary education or training, completing a program of study at a community college is associated with lower unemployment for both men and women and with higher earnings for women. The reduction in longer-term unemployment did not differ significantly from the reduction associated with graduation from university programs.

Some technical aspects of the Breneman and Nelson analysis suggest further limitations in the applicability of their results. Their analyses are not always consistent across all dependent variables in the specification of personal characteristics or circumstances that are controlled for. Also, because the hypotheses they seek to test are not rigorously spelled out and because a framework from which those hypotheses emerge is not explicitly specified, they include in their analyses of labor market outcomes "control" variables that are inappropriate because they are actually outcome variables (such as occupational status, firm size, office size, hours worked, number of people supervised, attainment of a bachelor's degree, and job tenure). This

misspecification of the labor market outcome equations creates the risk that the effects of participation in community college programs may be misestimated.*

Finally, Breneman and Nelson appear to overlook the reasonable expectation that labor market and psychological outcomes should be meaningfully associated with completion of programs, not merely participation in them at one particular time. In other words, an accurate assessment of the effects of community college programs requires knowledge of the entire pathway of postsecondary experiences that an individual follows, not merely one point on that pathway, since many different pathways may overlap.

Thus, although the Breneman and Nelson evaluation of the impacts of community college programs on students' educational, psychological, and labor market outcomes is a competently executed study, it can be improved upon in several respects. An additional follow-up that adds three years of educational and labor market information is now available for the Class of '72 data set and has been used in other studies. Three years of surveys for the NLS Youth also are available, with detailed transcript data to identify the individual high school curriculum of most students. With this information, participation in community college programs can be better specified than in the Breneman and Nelson study. Better specification of the estimating equations can improve the reliability of the estimates of effects. Such a study may also clarify the effect of the Breneman and Nelson differentiation between public community college programs and public vocational or technical schools and institutions. That distinction, which could be a major source of misinformation if not recognized, often has been overlooked in the controversy surrounding the results and is easily lost unless one reads Breneman and Nelson very carefully. Most important, a more complete approach that includes all types of postsecondary programs can better compare the community college with other programs and relate such programs to high school experiences.

The study by Hyde (1982) does not concern itself so much with the consequences of a particular pathway as it does with the factors that appear to influence which branch of the possible pathways is taken. The major emphasis that Hyde makes is upon the choice among not attending at all, attending a two-year college, attending a four-year public college or university, or attending a private four-year college. He hypothesizes that the

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*See Mertens and Gardner (1981), chapter 3, for a more complete discussion of this problem in the context of estimating effects of secondary vocational curricula.

likelihood of shifting from one pathway element to another decreases as the relative distance between them increases, with the distance defined on an ordinal scale that starts with working and proceeds through attending community college, attending a public four-year college, or attending another college or university. If the likelihood of moving from the present branch of one's pathway to a remote branch is very small, then the choices may be treated as binary and a multiple regression analysis for a binary dependent variable may be estimated. Hyde's work suggests that in the description of discreet pathways, it will be necessary to account for the characteristics of the population that selects them. Among these characteristics are socioeconomic status, race, factors influencing personal disposition toward certain choices, and high school preparation. These latter two require some further explanation. The variables that Hyde includes in the personal disposition vector are community orientation, family orientation, work orientation, locus of control, and self-esteem. These can be approximated in the present study using data available in the NLS Youth and the Class of '72.

High school preparation was treated by Hyde as being a vector of variables including academic curriculum, general curriculum, grade point average, test scores, and rate of college attendance for the respondent's high school. Although the present study is planned to look eventually at the choice points in the pathways in a specific and comparable manner, the high school experience is part of the pathway and will be defined somewhat differently, reflecting the previously cited work on patterns of participation (Campbell, Orth, and Seitz 1981). Thus, the work by Hyde primarily identifies and documents the differences in possible pathways at the postsecondary level but does not treat them as comprehensive units.

The third significant study identified in relation to the postsecondary segment of the pathways is that of Nolfi and his associates (1978). This study is also concerned primarily with choice among alternative pathway segments. It emphasizes working, homemaking, part-time work and schooling, and full-time schooling. The possible differentiations among pathways as a consequence of different kinds of schools is not treated in this study, nor are the consequences of actually following a particular pathway. Rather, the emphasis is upon the relative success of the choices, and upon the trade-offs that appear to influence the choices. In this latter sense the study may suggest an important descriptive condition that may differentiate among the pathways and should therefore be taken into account in the present work. Of further interest are a number of simulations that suggest the possible consequences of policy changes.

One final study relating to the postsecondary segment of the pathways is that by Kanause et al. (1978). They identified eight tracks that could be viewed as pathway segments at the

postsecondary level. These tracks included, in addition to those identified in the studies discussed previously, a military segment, a postsecondary vocational/technical school segment, and the condition of unemployment. Kanause and his associates did not follow the respondents through the tracks and take into account any shifts that occurred, but rather evaluated the consequences of having started on the track on personal qualities such as aspirations, attitudes, and self-concept.

In reviewing these studies, we find the identification of a number of postsecondary pathway segments, some descriptive information about them, and emphasis upon the possible factors influencing choice, but almost nothing relating to the consequences of following a specific pathway. The question arises as to why such a study has not been done. A partial answer may be found in the next section which considers that segment of the pathway defined by the portal of entry jobs.

Portals of Entry

An ambitious piece of work carried out by Luther Otto and his associates appears to be the landmark in this field. The focus of their work is on career lines that begin at the termination of the pathways of transition. Otto and his colleagues have developed the career line concept through their work, viewing it longitudinally through a long term follow-up of a high school class cohort and a synthetic series of cohorts derived from census data. One of the main contributions of this effort is the identification of the most probable job changes over time for a large cross-section of actual jobs. (The inverse of change, stability, is also recorded.)

Although Otto, Call, and Spenner (1981) indicate their concern for the contribution of education and training to the entry into career line (p. 105), and suggest concerns very similar to those underlying the present study, their most recent work (Spenner, Otto, and Call 1982) does not discuss this aspect in major detail. Rather, it follows the more traditional pattern of providing separate estimates of the effects of path elements on outcomes that may be described as career line elements (e.g., complexity, status, and skill). The analogous similarity of the work pathways that they designate as career lines and the transition pathways that are the subject of the present study does suggest an informative comparison. The major utility, however, will probably occur as the development of the pathways of transition sheds light on access to the career lines and provides information on what may influence the choices, opportunities, and consequences of the various routes through education and training into and along career lines. The very large numbers of multiple branch pathways identified by Otto and his associates suggest that a problem of prime importance in the present study would be

the reduction of the multitude of possible pathways to a manageable number.

The specific details of reduction are provided in chapter 3. After that reduction was accomplished we considered the questions of who followed the pathways and what factors influenced their choices. The analysis of those two questions was guided by a number of theoretical approaches that have been used to explain the decisions of young people regarding continuing education after high school and consequently, the level of education attained. It was also guided by theories that attempt to account for the consequences of completing different pathways. Included among them are status attainment (Colclough and Horan 1983, Sewell and Hauser 1975), dual labor market (Hadson and Kaufman 1982), educational credentialing (Akerlof 1970, Spence 1973), and human capital (Blinder and Weiss 1976, Ghez and Becker 1975). The intent in this phase of the study, however, is to define the dynamic variable of the pathway, in a form that will allow subsequent analysis from the perspective of different theories, and to select variables that should be considered in such an examination.

Although preliminary in this phase of the study, the theories are sometimes drawn upon to explain tentative findings. Their formal use will occur in the next phase. Their contribution to this phase of the study is summarized briefly in the next section.

Summary of the Theoretical Positions

The four theoretical approaches suggest the variables that ought to be related to choice of transition pattern.* Aspirations, socioeconomic background, attitudes, race/ethnicity, and gender are all suggested by two or more of the theories. It is helpful in summary to remind ourselves that although two or more theories may suggest the importance of some variable, they usually offer different reasons for expecting a relationship.

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*One of our reviewers noted our ommission of the sex role and life span literature. Our own work has highlighted the importance of sex roles in particular, and the discussions in chapters 4 and 5 reflect this. As the study moves into its multivariate phase, both of these bodies of literature will be consulted. Although they may have added to the preliminary phase represented in this report, we elected to limit our review to those literatures that addressed primarily the general patterns of transition in the early stages of life.

For example, all of these approaches emphasize the importance of educational aspirations. The dual labor market and credentialing theories link educational aspirations directly (and, for all intents, exclusively) to occupational aspirations. The status attainment and human capital approaches treat occupational and educational aspirations as simultaneously determined, with status attainment emphasizing social and attitudinal variables and human capital emphasizing personal, financial, and monetary variables as determinants of both types of aspirations. The fact that potential income, parents' education, parents' occupation, and parental aspirations for their children are usually closely related to each other implies that these differences in emphasis between status attainment and human capital views become blurred in the translation of theoretical propositions into empirical predictions. With available data, predictions of status attainment and human capital theories concerning these variables are usually indistinguishable.

A similar blurring of differences is present when the roles of race/ethnicity and gender are considered. Race/ethnicity and gender are the central focus of the dual labor market theory. For the other theories, relationships between choice of transition pattern and either race/ethnicity or gender may be observed, but they are not of central importance. They are the consequences of correlations of race or gender with other factors that are more proximate determinants of educational and occupational aspirations.

In summary, this study is guided by the considerations of several bodies of theory, with particular attention to the status attainment and the human capital approach. The function of the theories is to guide the conceptualization of the patterns of transition and to suggest the kinds of variables that should be of interest in explaining the patterns and their consequences.

CHAPTER 2

THE LONGITUDINAL DATA

The data used for these analyses are those available in the National Longitudinal Survey of Youth Labor Market Experience, Youth Cohort (NLS Youth) with the high school transcripts of a subsample of the NLS youth, and those available in the Class of '72.

NLS Youth

The 12,686 persons included in the NLS Youth sample were selected by a household screening process in the fall of 1978; the New Youth Cohort represents a national probability sample of youth who were between the ages of fourteen and twenty-one when originally selected. The sample was drawn in three stages: (1) a cross-sectional sample; (2) a supplemental sample of [illegible]ispanics, and economically disadvantaged whites; and [illegible]a sample of young persons serving in the military. Both the cross-sectional and supplemental samples were stratified by sex in order to obtain relatively equal proportions of men and women. Because blacks, Hispanics, and economically disadvantaged whites were purposely overrepresented in the NLS Youth sample, a weighting procedure was developed to permit more accurate estimates of these various combinations of the youth population.* Approximately 2 percent of the NLS respondents are Native Americans or of Asian or Pacific Island descent; these minority members are included with whites in this study.

Extensive background information about family, schooling, work history, and training was gathered for all the respondents in the NLS Youth Survey when they were first interviewed early in 1979. In addition, data on current educational and labor market activities were obtained. Follow-up interviews were conducted in 1980, 1981, and 1982. Follow-up interviews are scheduled with the participants in the New Youth Cohort through 1984.

NOTE: The section on NLS Youth was originally prepared by our colleague Patricia Seitz, who is now working at the University of Texas, Austin.

*For a full description of the sampling and weighting procedures used in the survey and a descriptive analysis of the first year's data, see Borus et al. (1980).

Transcript Collection Effort

The transcript collection effort was initiated through a subcontract let by the National Center for Research in Vocational Education to the National Opinion Research Center (NORC) in order to secure and code the transcripts of the NLS Youth respondents. The first round of transcripts was collected in 1980; the target sample consisted of youth who were seventeen years and older at the time of the 1979 interview. Transcripts were obtained in 1981 for NLS respondents who were fifteen and sixteen years old at the time of the first interview. Respondents excluded from both collection efforts were those in the military sample and those who attended foreign high schools. If a student had transferred and the original school's transcript was not complete, extensive efforts were made to locate and contact the new school to obtain the student's record.

The coded information, if available from the individual transcripts, included: (1) days absent, grades nine through twelve; (2) academic rank in class; and (3) math and verbal scores for aptitude tests (Preliminary Scholastic Aptitude Test, Scholastic Aptitude Test, American College Test). Course information included the specific course taken, the grade (or year) in which the course was taken, the letter grade received, and the credit received for the course.

Each course credit was converted to a common scale, the Carnegie credit unit, at the time of coding. This system assigns 1.0 credit to a standard full-year course, or one course taken one hour a day for 180 days. The Carnegie credit unit system provides a method that is sensitive to the length of time spent in the classroom (in contrast to a simple count of courses taken), thus facilitating a comparison of the youths' vocational education experiences on a national level.

A coding system to identify the actual courses taken by the student was developed from the Standard Terminology for Curriculum and Instruction in Local and State School Systems Handbook VI (Putnam and Chismore 1970). The course identification scheme consisted of a two-digit, subject matter prefix (e.g., math, English) followed by a two-digit code, which specifies the individual course within the general category (e.g., Math I, American Literature).

Data for the analyses were taken from the 1979, 1980, and 1981 surveys. The number of individuals and the demographic characteristics of the subsample vary depending on whether data from individual years or some combination of years were used in the analyses. The subsamples were always selected so as to contain only high school graduates.

The National Longitudinal Study of the High School Class of 1972

The National Longitudinal Study of the High School Class of 1972 was conducted under contract from the National Center for Educational Statistics, Office of the Assistant Secretary for Educational Research and Improvement, U.S. Department of Education. The survey was initiated in the spring of 1972. The sample design called for a stratified national probability sample of 1,200 schools with 18 seniors per school, school size permitting. A total of 19,001 students from 1,061 high schools provided base-year data on up to three data collection forms: a Test Battery, a School Record Information Form, and a Student Questionnaire. The Student Questionnaire was completed by 16,683 seniors.

The first follow-up survey was conducted from October 1973 to April 1974. Added to the base-year sample were 4,450 more 1972 high school seniors from 257 additional schools that had been unable to participate earlier. Sample members were asked where they were in October 1973 and what they were doing with regard to work, education, and/or training. Similar information was requested for the same time period in 1972 to facilitate tracing of progress since leaving high school and to define the factors that might have affected that progress. Retrospective information on some base-year variables was requested from those added to the sample at that time.

The second, third, and fourth follow-up surveys were conducted from October 1974 to April 1975, October 1976 to May 1977, and October 1979 to May 1980, respectively. Information collected included respondent status in October of each year from 1974 through 1979. Also, each follow-up survey included summaries of educational and occupational experiences and activities since the previous follow-up. As a result of the various retrospective data collection efforts, the number of individuals with some key data elements for all time points is 16,450, with some information available for as many as 23,000 respondents.

The Class of '72 data set contains summary information on courses taken in high school. Although this information is not as complete or authoritative as the transcript information, it does permit a classification of students based on the total number of courses taken and their distribution among subject areas. (See Meyer 1981a, 1981b for a detailed analysis of those data.)

As always when one is working with a large scale database that was not necessarily established for the purpose at hand, the variables needed for examination of the patterns of transition may not be present in a directly usable form or they may be missing altogether. Consequently, as the pathways were defined and the descriptive information was developed, direct comparability between the two databases could not always be maintained.

Missing entries on many of the tables reflect places where this occurs. A very significant body of information remains, however.

CHAPTER 3

DEFINING PATHWAYS

The concepts defined in chapter 1 were examined in the data to determine whether they substantially differentiated among the respondents, and whether they conformed to prior expectations of their possible impact. This examination led us to define the pathways in terms of four of the concepts: delay, interruptions, degree, and sequence. The number of concepts used was limited both to keep the number of designated pathways limited and to recognize the interdependence among the concepts. For example, delays and interruptions limit the number of years in attendance, and bachelor's degrees usually require a minimum of four years. Using the concept of years in addition to delay, interruption, and degree would, in most cases, be redundant. The concepts finally selected were chosen because they appeared to the authors to capture the bulk of the important dimensions of variation in the postsecondary experience. The selection is necessarily somewhat arbitrary and subjective. The concepts do not uniformly lend themselves to clear-cut quantitative or ordinal scaling that would permit standard techniques such as factor analysis or cluster analysis to be used to analyze dimensions of variation. The appropriateness of this selection of concepts must be judged ultimately by whether the classifications turn out to be useful in thinking about the transition process. We describe the decisions we made and the reasoning behind them so that readers may judge the decisions for themselves.

The data are presented in percentages, and care should be taken to note the base of the percent. Variation within a concept is presented first, followed by discussion of correlations between that and other concepts. Because some modification of the concepts was required for the NLS Youth data, the more complete information from the Class of '72 is discussed first.

Delay

Starting postsecondary education without delay is clearly the dominant pattern. Three-quarters of the Class of '72 sample attended postsecondary education at some time during the first seven years following high school graduation. Of those who eventually attended a postsecondary institution, three-fourths did so without delay. The percentages then drop off dramatically: 8 percent delay one year, 5 percent two years, 3 percent three years, 2 percent in each of the next four years. Nevertheless, there is a substantial fraction of respondents who delay their formal education for a year or more.

In explaining delays in continuing their education beyond high school, the students tended consistently, at three different follow-up points, to cite the same reasons more than others. Financial reasons were cited most frequently. Students reported that they needed money either for "themselves" or "to continue their education." Only those who planned marriage and homemaking frequently cited a need to earn money "to support their family." A substantial fraction of students said that they wanted to "take a break" from education. Other students had conflicting plans. They were either entering the military or planning marriage. Those who said they did not need further schooling were numerous, but they were nevertheless a smaller fraction than those who wanted to take a break.

The options that were available but not marked as often in the survey help to interpret the more frequent answers. Students were unlikely to say that their own academic performance (poor grades, lack of high school credits, or not being accepted for admission) was responsible for their not continuing immediately. Nor did they often report that acceptable schools, either in terms of distance or in terms of program offerings, were unavailable. Some students said that they did not like school or that they wanted practical experience, but the frequencies were only about half those for financial reasons. Finally, few students reported not continuing because they were discouraged from continuing, either by teachers or by parents.

Delay is associated with obtaining degrees, although it is dangerous to attach causal implications to that relationship. In part, this relationship is a function of opportunity. Starting earlier within a fixed time period increases the chances that a degree will be earned by the end of the period. In the Class of '72, 92.4 percent of those who had acquired any degree by 1979 started their postsecondary education without any delays. As one would expect, the percentage of students who earned some degree by 1979 declined with later starting dates for their postsecondary education. Among those who began in 1972, 53 percent earned degrees by 1979. But the percentage was cut more than in half, to 22 percent, for those who started in 1973, and nearly in half again, to 13 percent, for those who began in 1974.

The shorter length of vocational and two-year academic programs makes those programs easier than bachelor's programs to complete if begun with a delay. The data confirm that expectation. Whereas 96 percent of those earning a bachelor's degree started postsecondary programs in 1972, the corresponding proportions for those with two-year academic degrees or vocational degrees as their highest achievement are 86 percent and 80 percent, respectively.

Delay is closely related to type of school attended. Students who either attend only four-year colleges or universities

or attend some combination of types of postsecondary institutions are more likely to begin without delaying their schooling. For those patterns of attendance, 80 percent or more of the students start without delay. Among those who attend only vocational schools, only 50 percent start without delay. The corresponding proportion is about 30 percent for those attending only two-year institutions.

There are material differences in the educational sequences of most students who start immediately and most who delay a year or more. Of those who start immediately, 34 percent will attend only four-year colleges or universities, 10 percent will attend only vocational/technical schools, about 15 percent have indeterminate sequences, and only 2 percent will attend only two-year academic institutions. Among those who delay entry by one or two years only about 12 percent will attend only four-year colleges or universities. Indeterminate sequences rose dramatically, to 38 percent of those who delay one year, and then returned to 16 percent of those who delay two years. Attendance at vocational/technical schools or two-year academic institutions is more prevalent among those who delay one or two years than among those who start immediately. Among those who delay one year, 19 percent will attend only vocational/technical schools and 5 percent will attend only two-year academic institutions. Among those with a two-year delay, 29 percent will attend only vocational/technical schools and 8 percent will attend only two-year academic institutions.

These differences are consistent with fundamental differences in goals and clientele among types of institutions. Two-year and vocational schools exist in part to provide access to higher education to students who are not ready to continue their education immediately after high school.

Degree

Only a minority of respondents, about 32 percent, received any postsecondary degree between 1972 and 1979. The bachelor's degree is the most common by far, with about 25 percent receiving it. Two-year academic degrees were more frequent than vocational degrees, with about 6.3 percent reporting the former and about 4.4 percent the latter. About 3 percent of the sample earned two degrees, with the most frequent combination being the two-year academic and the bachelor's degree. Degrees earned are closely related to sequence of attendance and are discussed again below.

The percentage of respondents receiving vocational degrees is somewhat misleading. Many postsecondary vocational education programs offer certificates rather than degrees as the evidence of successful completion. Of the 1,935 students in the Class of '72 sample who attended only vocational schools but did not

receive degrees, two-thirds (66.1 percent) received certificates. The certificates represent programs of widely varying rigor and duration. An initial attempt was made to exclude certificates that obviously lacked substantive content or could not possibly be related to job skills. The two-thirds figure reported above excludes them. Nevertheless, we did not feel comfortable enough with these reports of certificates to treat them as equivalent to degrees. We realize that this question requires further analysis. We expect to consider this issue in more detial in the next phase of our research.

Interruptions

Those respondents who had no postsecondary schooling or only one year could have no interruptions, by definition. Among those who had at least two years of postsecondary schooling, about 52 percent had no interruptions. A substantial fraction, 36.5 percent, experienced one interruption and a smaller but important fraction, 9.9 percent, experienced two interruptions. Only about 2 percent had three or more interruptions. Thus, interruptions seem to be rather frequent among those with two or more years of education.

To clarify the interpretation of transition patterns that involve interruptions, we identified the activity the respondents were engaged in at the time of the interview that corresponded most closely to the beginning of the interruption. Because the respondents could report doing several things at the interview date (such as being a homemaker and working full-time), a hierarchy of activities was established. Full-time or part-time work was given priority over looking for work, which in turn was given priority over activities usually done while out of the labor force. These three labor force statuses were combined with another category (whether or not the respondent reported being a homemaker) to give a classification scheme with six categories. Two additional categories completed the scheme: military service and unidentified activity. Military service was given priority over all other classifications, but only if it was reported at the beginning of the interruption.

This classification scheme was then combined with the timing of the interruption. Interruptions that occurred before the respondent's first degree was earned were distinguished from those that occurred afterwards. Thus, three different timing relationships are involved here: predegree interruptions, postdegree interruptions, and interruptions for respondents who did not earn degrees. Our analysis counted for each respondent up to two interruptions of each type.

The interruptions were classified in this manner to answer several questions:

- When postsecondary education is interrupted, what is the most frequent activity undertaken in its stead?
- How frequent are predegree, postdegree, and nondegree related interruptions, and is there any difference in incidence of each of these types?
- How often do people who experience interruptions return to complete a degree?
- Are predegree interruptions significantly different from the interruptions of those respondents who do not earn degrees?

Table 3.1 shows the results of this classification. The Class of '72 data provided 504 predegree interruptions, 2,070 postdegree interruptions, and 3,473 interruptions for respondents who did not earn any degrees. About 10 percent of those respondents who earned degrees experienced at least one interruption before completing their degree. Only 1 percent experienced two or more interruptions. Among all of the respondents who experienced at least two interruptions (prior to their degree or at any time if no degree was earned) less than 5 percent eventually completed a degree. This proportion is significantly less than either the 15 percent of those with only one interruption who eventually earn degrees or the 43 percent of those respondents who earn degrees while experiencing no interruptions. Apparently, one interruption is difficult to survive, but getting the degree after two interruptions is very difficult indeed.

The reasons (not shown in the table) that students cited for interrupting their education were similar in one respect to those cited for delaying, but they were quite different in other respects.* As with delays, financial reasons were very important in causing interruptions. This result is consistent with the observation that most students work during an interruption in their education. But two of the other most frequent reasons for interruptions were not cited as among the frequent reasons for delay. A desire for practical experience was an available answer for both delays and interruptions, but it was chosen frequently only as a reason for interruption. Poor performance in college was also cited for interruptions, although poor performance in high school was not cited as a reason for delay. Finally, two reasons often cited may overlap but we cannot know for certain because they were available as reasons for either delay or interruption, but not for both. Those who delayed their education frequently

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*The available responses were different for these questions, so that comparisons cannot be direct.

TABLE 3.1

ACTIVITY DURING INTERRUPTION BY TIMING OF INTERRUPTION
FULL SAMPLE
CLASS OF '72

	Predegree Interruption		Postdegree Interruption		Nondegreed Interruption	
	(n)	(%)	(n)	(%)	(n)	(%)
Not identified	21	4.2	21	1.0	269	7.7
Homemaker, not in labor force	15	3.0	34	1.6	113	3.3
Other, not in labor force	52	10.3	97	4.7	151	4.3
Homemaker, unemployed	2	0.4	11	0.5	32	0.9
Other, unemployed	28	5.6	104	5.0	161	4.6
Homemaker, full- or part-time work	15	3.0	167	8.1	216	6.2
Other, full- or part-time work	352	69.8	1,583	76.5	2,227	64.1
Military	19	3.8	53	2.6	304	8.8
Total interruptions	504	100.0	2,070	100.0	3,473	100.0
Multiple interruptions	46		264		996	
Respondents experiencing interruptions	458		1,806		2,477	
Respondents with degree	5,218		5,218			
Respondents without degree (attended some postsecondary)					6,996	
Percent eligible respondents experiencing interruptions		8.8		34.6		35.4

NOTE: Respondents attending postsecondary 5,218 + 6,996 = 12,214
Respondents experiencing interruption--nondegreed 2,477
Respondents experiencing predegree interruption--degreed 458 (15.6% of 458 + 2,477)
Respondents experiencing two interruptions--nondegreed 996
Respondents experiencing two predegree interruptions--degreed 46 (4.4% of 996 + 46)
Degreed respondents 5,218 (42.7% of 12,214)

cited a desire to "take a break" from school. The reason most often cited for interruptions is best characterized as having "uncertain goals." The distinction between these is not clear-cut. Many of the students who take a break from education do so to clarify their goals. Others who take breaks have their goals clearly in mind. However, not all students whose goals are ill defined take a break from education.

The reasons for interruptions that were cited less frequently included marriage plans, which were fairly important in explaining delays. Illness, family emergencies, an offer of a good job, and lack of relevance of school to work were all cited for interruptions by some respondents, but less frequently than the other reasons noted previously.

Full- or part-time work is by far the predominant activity in all interruptions, whether predegree or postdegree. Over two-thirds of all the interruptions are of this type. Among the other classifications of interruptions, approximately equal percentages (about 5 percent) look for work, remain outside the labor force, and serve in the armed forces. The percentage that report being homemakers is small compared to what one would expect traditionally, since only about 20 percent of women experiencing interruptions report that they are homemakers. Moreover, only about 4 percent report themselves to be both homemakers and outside the labor force. Most of those women did not earn degrees in any postsecondary institution. The traditional picture of women attending school to find a mate and settle down to a quiet family life is now very much out of date, as many observers have been reporting. Among women who experience interruptions in their postsecondary education, most, especially those who receive postsecondary degrees, do not think of themselves as homemakers. Even among those who do, four-fifths of them were either working or looking for work after their schooling was interrupted.*

There is at least one clear difference in activity pursued between predegree and postdegree interruptions. Predegree interruptions are more likely to involve being out of the labor force and less likely to involve both homemaking and working outside the home. Otherwise, activities during predegree and postdegree interruptions seem quite similar. But both predegree and postdegree interruptions differ from interruptions among nondegreed respondents in two principal respects. Degreed respondents are more likely than nondegreed respondents to be working at the beginning of their interruption. Also, respondents experiencing interruptions that involve immediate military service are less likely to complete degrees than respondents with other types of

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*For more detail on these interruptions, see appendix table A-1.

interruptions. This finding may suggest that interruptions for military service (at least during the mid-1970s) reduced the likelihood of getting a degree more than did other types of interruptions.

This closer examination of interruptions led us to two conclusions regarding definitions of the pathways. First, from the beginning we had felt that interruptions had to be included in definitions of the pathways. But the importance of the distinction between predegree and postdegree interruptions became clear only after some of the analysis had been completed. We decided that transition patterns that reflected interruptions for those people earning degrees should show only predegree interruptions. Respondents who experienced only postdegree interruptions were combined with those who earned similar degrees but experienced no interruptions.

Second, because of the predominance of working as the activity associated with the interruption, we decided not to distinguish among interruptions by type of activity. Any more detailed analysis of the pathways that might depend on the activity during the interruption could make a special allowance for that.

Changes of School

About 50 percent of those who attend some postsecondary educational institution change school at least once. Multiple changes of school are frequent, involving nearly three-fifths of those reporting any change. Among only the students who could change school because they attended during at least two years, about 60 percent change school at least once, and about 15 percent change school three or more times. (These percentages refer to known changes of school and are conservative estimates of enrollment instability.)

The number of school changes varies with degree received. Those students who received only a bachelor's degree were the least likely to change schools. As one would expect, those with more than one degree were more likely than those with only bachelor's degrees to change schools at least once. For some respondents this change would be necessary to get the second degree. But, surprisingly, the most likely group of degree recipients to change schools (46 percent changed schools more than once) was the group that received only two-year academic degrees. It is not known from these data whether this occurs because the changes in schools disrupt completion of degree requirements, or whether two-year degrees are more easily obtained (than other degrees) in those cases when students are compelled for other reasons to change colleges. In any event, the fraction of the full sample with only two-year degrees is rather small.

Despite the frequency of changes of school, we decided to assign lower priority to this concept than to delay, interruption, degree, and sequence. This was essentially a decision motivated by our concern to keep the number of separate pathways manageable.

Sequence

The concept of sequence reflects combinations of types of schools attended. About one-fourth (25.7 percent) of respondents attended no postsecondary schools of any kind. About one-fifth (21.3 percent) attended only four-year colleges or universities. Another fourth (26.5 percent) of students attended at least two different types of schools. Most of those attended four-year colleges or universities at some time. Thus, nearly half of the sample attended a four-year college or university at least once over the eight-year period. A substantial fraction (10.4 percent) of respondents attended only vocational-technical schools. The fraction attending only community colleges is surprisingly small (3.9 percent).

There is a strong relationship between sequence and degree earned. Overall, less than half of those who attend postsecondary schooling acquire any degrees. But among those respondents who attend only four-year colleges or universities (21.3 percent of the sample), 53 percent eventually acquire a bachelor's degree. In contrast, of those attending only vocational-technical schools (12.1 percent), only 15 percent acquire any degree.* Those who attend two-year academic institutions (3.9 percent) are even less likely to acquire any degree; only 7 percent of them do.

Sequences that reflect either a lack of clear goals or the presence of obstacles to achievement are less likely than other sequences to lead to degrees. The regression and mixture sequences are similar in yielding vocational-technical degrees (about 6 percent) but the mixture sequence is much more likely to yield either two-year or bachelor's degrees. About 11.8 percent of those in the regression sequence acquired two-year degrees, compared to 22 percent of those in the mixture sequence. About 22 percent of those in the regression sequence have bachelor's degrees, compared to about 36 percent of those in the mixture sequence.

These regression and mixture sequences are very unlikely to produce a corresponding sequence of degrees. Only 0.05 percent

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*Recall that certificates are not included in this figure and that nearly two-thirds of students who attend vocational schools without receiving degrees do receive certificates.

of the sample (0.2 percent of those earning any degree) reported earning first a bachelor's degree and then either a vocational/technical or community college degree. This contrasts with about 2.5 percent of the sample (7.8 percent of those earning degrees) who report receiving a bachelor's degree after getting a degree from either a vocational/technical school or community college. These findings suggested that the frequency of pathways showing both a degree and a mixture or regression sequence would be small. We considered whether to combine the mixture/regression sequences with indeterminate sequences in those cases where a degree was earned.

In order to decide whether the indeterminate sequence could be grouped with other sequences without loss of information, the sequences were compared for degree and delay. In terms of delay, the indeterminate sequence differs from all others in three respects. The indeterminate sequence has about 6 percent fewer respondents who started with no delay. It has about 13 percent more respondents who began postsecondary education with a one year delay. Finally, it has smaller percentages of students (less than 1 percent) starting in each of the years 1976 or later, compared to about 2 percent in each year for other respondents. In terms of degrees earned, those in the indeterminate sequence were 10 percent less likely to obtain any degree than were those in other sequences. They are about as likely as others to get only a vocational or two-year academic degree (5-6 percent for each), but only 19 percent of the indeterminate sequence earn bachelor's degrees only, compared to 29.6 percent for the rest of the sample.

These differences suggest to us that the mixture, regression, and indeterminate sequences should remain separate when there were enough cases to justify separation. In the case of degreed pathways involving regression or mixture sequences, there were so few respondents following the regression or mixture pathways that consolidation with the indeterminate sequence seemed reasonable. Where degrees were not earned, however, many of these sequences accounted for enough cases to lead us to maintain the separate sequences.

Years

Three-quarters of the sample (74.3 percent) had at least one year during which they were enrolled in postsecondary education. A large percentage (42 percent) had four or more years of enrollment. Interestingly, the majority of those with at least four years of education (30 percent out of 42 percent) reported five or more years enrolled.

Attendance or enrollment is not synonymous with achievement, however, and much attendance is reported that apparently does not

lead to a degree. For example, among those who had earned no postsecondary degree by 1979, 62 percent had attended a postsecondary institution at least once and 22 percent had four or more years in which they attended. Of those respondents reporting only a vocational-technical degree, 43 percent attended postsecondary institutions during parts of four or more years. Of those with only two-year academic degrees, 62 percent reported four or more years in attendance. Nearly half (45.4 percent) of those who attended postsecondary institutions during four years had received no degree by 1979, and those who acquired degrees often took longer than one traditionally expects to get their degrees. Among those respondents who earned a bachelor's degree, only 24 percent got it with exactly four years of postsecondary education. Another quarter (24 percent) had five years of education, and half (51 percent) had six or more years in attendance.

We concluded that identifying years of education directly in the pathways would fragment most of them so much as to make analysis of their consequences impossible. But we also felt that we could further differentiate among those who acquired four-year degrees. For that purpose we used the concept of postdegree enrollment.

Postdegree Enrollment

Postdegree enrollment was rather common among those respondents who earned bachelor's degrees. But it was present for substantial numbers of respondents only when we considered those who showed no delays or interruptions. We applied the postdegree enrollment distinction only for the group without delays or interruptions. About 40 percent of those who earned bachelor's degrees also took courses beyond that degree. They are shown in a separate pattern in chapter 4.

Field of Study

The areas of postsecondary specialization,* when they occured, were oringinally considered as elements in the definition of patterns, but they were omitted from the final specifications in order to keep the number of pathways manageable. They are discussed in this section because it is of interest to note that certain transition patterns are most likely to lead through specific fields of study. They reflect the area in which the students have been acquiring skills or training and will be indicators of the types of pathway that will be followed to study specific areas of interest. Table 3.2 shows the distribution of the last reported fields of study for respondents in the Class of

*See Levinsohn et al. 1978.

TABLE 3.2

MOST RECENT FIELD OF STUDY BY TRANSITION PATTERN
(PERCENTAGE DISTRIBUTION WITHIN PATTERN)
CLASS OF '72

		Agriculture	Business	Office	Computer	Education	Engineering	Mechanical & Engineering Technology	Fine Arts	Health	Public Service	Phys. Science	Social Science	Bio. Science	Professional	Other	Undecided	Unknown
No postsecondary	0000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	100.0*
Traditional pathway, no degree	0001	-- *	4.0*	18.9*	2.9*	0.4*	1.5	16.3*	1.4*	11.0*	11.3*	0.3*	2.5*	0.1*	-- *	5.2*	2.0	22.3*
	0002	--	13.0	12.8*	2.6	5.2	6.8*	5.7	5.2	10.6	7.9*	1.1	9.4*	2.3	-- *	3.9	4.6*	9.0*
	0003	1.0	18.9*	5.1*	1.5	13.6*	2.6	3.0*	10.2*	6.0	2.4	3.0*	8.1*	4.6*	0.5*	1.8*	2.1	15.6*
	0006	0.5	18.0*	8.3*	0.5	8.7	2.2	5.9	6.7	8.9	3.2	2.4	9.1*	0.8	1.0*	3.2	1.9	18.7*
	0009	0.4	9.4	11.0*	1.2	4.2*	4.8*	7.0	6.0	8.3	3.8	2.0	4.3	1.3	1.1*	1.2*	1.7	32.1
Vocational degree	0011	--	12.5	12.5*	3.6	0.8*	0.8	24.4*	0.7*	14.8*	5.3	2.2	4.1	0.6	1.1	3.7	0.6	12.4*
	0019	1.7	12.9	4.7	4.0*	4.8	3.1	9.4*	5.3	26.7*	3.5	0.7	4.1	1.8	1.3*	6.4*	1.8	7.7*
	1011	--	3.8*	3.0	4.7	-- *	7.3	27.4	--	5.4	6.0	3.0	25.1	2.2	--	4.1	2.1	5.9
Community college degree	0022	--	14.7	9.7*	1.6	14.7*	3.5	5.4	8.1	15.4*	4.1	3.1	8.8	1.8	0.6	1.6	0.3	6.7*
	1022	--	18.4	7.0	2.1	10.7	--	3.9	15.5*	10.0	12.8	2.4	3.6	6.0	1.7	2.5	--	3.4
	0029	1.0	18.2*	7.0*	2.1	6.9	3.6	4.8	9.7*	14.6*	3.5	0.5	7.4	2.5	4.0	5.0	1.4	7.8*
Four-year degree	0033	2.3*	18.3*	0.4*	0.9*	16.4*	3.8*	0.9*	9.0*	4.4*	1.7*	2.8*	9.9*	3.0*	11.7*	4.3	1.2	9.1*
	1033	--	22.7	1.2	--	16.4*	5.1	--	1.7	0.4	2.4	3.4	25.1	0.9	12.1	4.2	--	4.7
	0039	2.4*	19.1*	0.9*	2.0	13.3*	4.7*	2.4*	6.0	8.1	2.8	3.4*	9.0*	3.5*	9.9*	5.3*	1.8	5.2*
Degree and Continuing	0083	2.4	20.5*	0.8	2.8	21.7*	3.0	0.7*	7.1	7.7	3.6	1.0	6.2	3.8	7.0*	4.0	1.8	5.8*
	0093	2.1*	16.3*	1.1*	1.7	18.8*	4.2*	0.7*	9.0*	6.0	2.5	2.0	9.3*	3.0*	12.7*	4.8*	0.3*	5.3*

TABLE 3.2 (Continued)

		Agriculture	Business	Office	Computer	Education	Engineering	Mechanical & Engineering Technology	Fine Arts	Health	Public Service	Phys. Science	Social Science	Bio. Science	Professional	Other	Undecided	Unknown
Interruption and no degree	0103	2.2	27.1*	0.2*	1.4	13.4*	4.3	4.9	9.0*	7.1	1.9	3.6*	6.2	2.9	2.5	7.0*	2.8	3.5*
	0105	0.6	16.8	4.1	1.9	6.2	5.8*	4.7	5.8	16.1*	7.3	0.8	5.5	1.7	6.7	4.4	4.0	7.6*
	0106	1.1	20.1	5.2	4.2*	7.7	3.1	11.1*	6.9	10.4	5.9*	2.3	5.8	1.8	1.0*	4.2	2.5	6.5*
	0107	1.5	21.0*	5.5	3.0	9.5	5.1	6.6	6.4	9.0	2.7	3.3	8.0	2.1	2.9	5.6	1.5	6.5*
	0109	0.9	16.0	5.5	2.8	5.5*	4.2	9.9*	8.1	10.0	7.2*	2.9	3.9*	3.3	2.2*	5.4	1.2	10.9
Delay and no degree	1001	0.4	7.0*	6.2	2.2	1.5*	3.9	15.3*	0.5*	5.1*	4.6	1.4	4.0*	0.8*	0.2*	6.6*	2.0	38.2*
	1002	0.8	15.5	7.0	4.0*	3.1*	1.8	6.6	3.8*	9.7	1.8*	0.7	1.6*	1.9	3.1	2.4*	2.5	33.8*
	1003	1.8	20.6*	2.5	0.9	7.3	4.1	3.7	3.4	4.7*	2.4	1.9	5.3	2.6	1.6*	5.5	5.0*	26.5*
	1009	0.8	8.7*	6.9	0.9	3.6*	2.1	8.7	5.2	7.5	4.6	1.1	3.9	0.3*	1.2*	5.5	3.2	36.0*
Delay, interruption, and no degree	1106	—	16.3	2.8	5.8*	3.2*	6.1	9.6	8.8	6.0	12.3*	0.3	3.0	2.8	3.9	7.3	1.8	10.0
	1109	1.5	11.9	6.4	3.7	4.4*	4.9	13.3*	3.4	10.9	3.2	0.4	3.0*	1.1	3.5	7.1	3.9*	17.3
All respondents (n = 16,450)		1.0	11.7	3.7	1.7	6.8	2.7	5.0	4.8	6.4	3.2	1.6	5.2	1.6	3.6	3.6	[illegible]	36.2
		1.5	18.3	5.8	2.6	10.7	4.3	7.8	7.5	10.0	5.0	2.4	8.1	2.5	5.7	5.6	2.3	

NOTE: Pathway codes are presented in table 4.1.

*Probability $\leq$ .05 that the observed percentage would occur by chance. A chi-square test with 1 degree of freedom was calculated separately for each cell.

'72 data. The most informative way to discuss these data is by field.

Agriculture is studied most often at the university level. Even when no degree is received, the student is usually attending in a university setting or in a sequence of institutions that includes university attendance.

Science fields (physical, biological, and social), engineering, the professions, and education are all concentrated in university-level transition patterns. These types of relationships are to be expected given the nature of the subject being studied. But some differences emerge even among these largely university-oriented fields. Biology, professional study, and education are most likely of all fields to involve additional schooling after the university degree. For education and professional fields this additional study occurs often without leading to a specific degree. Engineering, on the other hand, reveals its more practical side by allowing more students to follow mixed-sequence pathways and even pathways that involve interruptions (usually for work) and no degree. Education, somewhat surprisingly, also allows mixed-sequence pathways to be involved. This pattern may very well reflect teachers returning to school for credentialing, updating, or special courses required for their jobs. For example, education is one of the two fields most often obtained as a person's second degree. Finally, those respondents who attend only vocational or two-year schools are unlikely to be studying education.

Business is the subject area that shows the widest variety of patterns contributing substantially to it. Business is studied in patterns involving community colleges, universities, and multiple institutions, even pathways that do not lead to a degree. It is not often the subject studied in vocational schools. This pattern would be expected because of three tendencies within the field. First, the field tends to be chosen by many less academically-oriented students who attend universities or community colleges. Second, it is often chosen as a fall-back area for students who are not succeeding in other subject areas that were their first choices. Third, it is often the subject of study for people who acquire degrees in other subjects, work for a while at full-time jobs, and then seek advancement in their careers with part-time study. This interpretation of the reasons for the variety of patterns associated with business is supported by comparing the field first reported by the respondent with the last reported field. Such a comparison (not shown here) confirms that business is among the fields that people are most likely to have studied later after beginning to study something else. Computer science, health, social science, and public service share that attribute but probably for different reasons, as noted below. Also supportive of this interpretation is the finding that business is among the fields in which further nondegreed

study after achieving a degree is most frequent. Business is also (along with education) one of the two fields most likely studied for a person's second degree. Finally, business is often the last field of study in regression sequences.

Health is similar to business in drawing from a number of transition patterns. This variety of patterns probably corresponds to the variety of levels of job complexity available within the health area. The most complex health-related jobs are also considered professional jobs, and respondents may have split their answers among those two fields, for health shows only a slight tendency to have people in the pathways showing a university degree and continuing. But health fields also are frequently studied by those who get vocational degrees, two-year degrees, and even those with interruptions but no degree.

Despite great differences in their subject matter, the fields of clerical/office study, public service, and mechanical and engineering technology reflect similar pathways. Both are very frequently the subjects studied by those students who obtain vocational or two-year degrees and by those who earn no degree at all. They are among the least likely to involve study at four-year institutions.

Fine arts can be studied through a variety of pathways. Students of fine arts often get either community college or university degrees. But many other students of fine arts follow pathways that show an interruption but no degree.

Computer fields show an interesting array of patterns, especially because the incidence of computer subjects as a field of study differs considerably from the distribution of transition patterns among those with computer-dominated occupations. Those people whose work is called a computer-related occupation come most often from university degreed patterns. Those students who report computer science as their field, however, are not predominantly from university patterns. They often come through patterns involving attendance at vocational institutions without receiving degrees. It would appear that many people in the late 1970s attended vocational schools and studied computer programming. But those who did not receive degrees may have found it difficult to get jobs in the area.

In summary, the variation of pathways that are associated with specific fields of study demonstrate one form of constraint on the pathways chosen. Depending upon the type of study and its related occupation, certain pathways are not appropriate or at least not popular. Also, the possibility is suggested that the objectives of some fields of study may not place a strong emphasis on the aspect of credentialing. Fine arts is an example of such a field.

Returning now to the concepts that were reviewed and actually selected for use in defining the pathways, there seems to be ample evidence that the concepts of delay, interruption, degree, and sequence could serve usefully in defining pathways. The nature of the available data required some adjustments before they could be applied to the NLS Youth data. This adjustment is described in the next section.

Modifications for the NLS Youth

Patterns of transition are dynamic, occurring over time. In contrast to the Class of '72 respondents, for much of the NLS Youth sample sufficient time had not elapsed to allow substantial variation to emerge within some of the defining concepts. For example, a high school graduate who had immediately entered school after graduating in 1980 would not have had sufficient time to complete either a two- or four-year degree by the 1981 interview. Therefore, if the respondent was enrolled, had not been graduated from high school long enough to have completed a degree in the sequence being followed, and had not shown a pattern of interruptions, the respondent was assigned as if the appropriate degree had been earned. This convention will result in an overestimate of degrees earned because some will inevitably drop out before completing the degree. On the other hand, that overestimate is offset somewhat because some respondents who were not assigned to a degree-producing sequence because of interruptions will get degrees. Although the magnitude of estimation error cannot be assessed, it is expected to be less than the bias that would occur if all such cases had been treated as nondegree earners.

Pathway "Signatures"

After their selection and the previously noted adjustment, the four elements were combined into pattern "signatures" that permitted each respondent to be assigned to a unique pattern. To repeat, these elements were delay, interruptions, sequence, and degree. The other elements, as well as the secondary patterns identified by earlier research, were used in specific analyses to further partition the groups following each postsecondary pattern. Because a description of those who followed each pattern was an objective, those patterns that fit at least 1 percent of the sample were identified for further study. The remainder were treated as an "other" category.

An example of a "signature" and its interpretation may clarify the approach. A pattern that involved an immediate start in postsecondary education, continued without interruption, and resulted in obtaining a degree from a four year college or university would be coded 0033. The first digit indicates the start

without delay. The second indicates that there were no predegree interruptions, the third specifies a four year degree, and the fourth indicates that the degree was obtained from a four-year college or university. A code signature of 0135 would apply to a pattern that began without delay, had one predegree interruption, resulted in obtaining a four year degree, but began in a vocational-technical or community college and then continued in a four-year college or university. (The complete set of these code signatures and their descriptions is given in table 3.3.)

TABLE 3.3

GLOSSARY OF PATHWAY SEQUENCES

Pathway Sequences	Description
0000	Never attended a postsecondary institution
0001	Attended only vocational/technical schools, no interruptions or delays, no degrees
0002	Attended only community college, no interruptions or delays, no degrees
0003	Attended only four-year college or university, no interruption or delay, no degrees
0006	Regression sequence, no interruptions or delays, no degrees
0009	Indeterminate sequence, no interruptions or delays, no degrees
0011	Attended only vocational/technical schools, received vocational degree, no predegree interruptions or delays
0019	All sequences except only vocational/technical, received vocational degree, no predegree interruptions or delays
1011	Same as 0011 but with delay
7011	Attended only vocational/technical schools, received vocational degree, no predegree interruptions, delay cannot be determined (NLS Youth only)
0022	Attended community college only, four-year college or university only, or a progression sequence, received two-year degree, without predegree interuption or delay
1022	Same as 0022 but with a delay
0029	Regression, mixture, or indeterminate sequence, received two-year degree, without predegree interruption or delay
0033	Progression sequence (in Class of '72 only) or attended only four-year college or university, received a four-year degree, without predegree interruption or delay, without courses beyond the degree
1033	Same as 0033 but with a delay

TABLE 3.3 (Continued)

Pathway Sequences	Description
0035	Same as 0033 but the only sequence is progression (NLS Youth)
0039	Regression, mixture, or indeterminate sequence, received four-year degree, without predegree interruption or delay
0083	Same as 0033 but with classes after the degree and without more than one degree
0093	Same as 0083 but with more than one degree
0103	Same as 0003 but with interruption
0105	Progression sequence, with interruption but without delay, no degree
0106	Same as 0006 but with interruption
0107	Mixture sequence, with interruption without delay, no degree
0109	Same as 0009 but with interruption
1001	Same as 0001 but with delay
1002	Same as 0002 but with delay
1003	Same as 0003 but with delay
1009	Same as 0009 but with delay
1106	Same as 0106 but with delay
1109	Same as 0109 but with delay

CHAPTER 4

TRANSITION PATTERNS AND STUDENT BACKGROUND

With the transition patterns conceptualized and defined, we can ask which of them are followed most frequently, and we can see from those frequencies the dominant combinations of degrees earned, delays, interruptions, and sequences of enrollment. The frequencies of these combinations are of interest in themselves, but they are not the primary interests of researchers, policymakers, secondary-level school administrators, teachers, and guidance counselors. Researchers are interested in the relationships between the frequently followed transition patterns and the variables predicted by sociological, educational, economic, psychological theories to influence choice of pathway. Those variables usually are of interest also to policymakers, administrators, teachers, and counselors to the extent that they identify conditions or circumstances that promote or hinder educational attainment. The theories of researchers help to pinpoint either sources of inequities in educational opportunity or general obstacles to educational attainment that public policies or institutions can help to overcome or eliminate. Even theoretical variables that are not directly manipulable by public policy or school personnel are of interest if they suggest either a source of inequity that policy variables can be used to offset, or if they suggest a channel through which public policy or institutions may operate.

Researchers and policymakers are also interested in whether following certain pathways affect such outcome measures as occupation, earnings, employment and unemployment. The concern for equitable access to transition pathways arises fundamentally from the belief that differences in outcomes may be attributable, at least in part, to differences in pathways followed.

The Class of '72 and NLS Youth data sets have so many measurable counterparts to the outcome variables and the variables that influence choice of pathway that only a small fraction of the interesting potential relationships can be examined here. As noted previously, the primary objective of the work described in this report was to identify the transition patterns in preparation for a more detailed examination of these relationships in the next phase of this research. It is possible here only to look closely enough at these relationships to suggest whether our conceptualization is consistent with the broad outlines of these principal theories and whether our specification of transition patterns may be useful in examining the relationship of postsecondary education and training to outcomes. Three outcome issues are considered briefly in chapter 5. This chapter considers the relationships between pathway followed and a selected few individual background characteristics or circumstances that

are suggested by the theories or are of interest because they reflect (in a broad manner) the current impact of policy differences on postsecondary choices.

The variables suggested by the sex role, life span, dual labor market, and credentialling theories, albeit with different rationales, include gender and race/ethnicity. Status attainment theory suggests that the role of significant others is very important, and a brief look is taken at the association between pathway followed and the influences of parents, friends, teachers, counselors, and other adults. Both status attainment and human capital theories suggest that factors related to parents' income or socioeconomic status level will influence postsecondary decisions. Lacking a measure of family income in either data set, we elected to let socioeconomic status reflect the common concerns of this aspect of the human capital and status attainment theories.*

Also suggested by both status attainment and human capital theories is the role of higher academic ability in easing access to preferred institutions or pattern sequences. Whether true measures of ability can be defined is debatable, but we employed two sets of measures of a related but admittedly different concept, academic achievement. The measures are high school rank in class and standardized test scores taken as seniors.

Also suggested by status attainment and by human capital as important determinants of postsecondary educational choices are educational and occupational aspirations. Besides the match between educational aspirations and attainment, there is the issue of whether the educational and occupational aspirations of an individual are congruent, or whether there is a strong tendency for people to aspire to education that far exceeds the demands of their occupational goals. The location of the high school (as expressed by the region of the country and the size of the community in which it is found) and its size are examined as indicators, first, of broad regional differences in educational policies and, second, of a variable usually subject to direct manipulation by policy.

Finally, we look at the relationship between high school curriculum and transition pattern. It is critical to differentiate between the effect of curriculum on decisions and the fact

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*Data were available in Class of '72 on the financial aid offered to students by their first three choices of postsecondary school. But the complexity of modeling these factors adequately in the time available to us precluded a detailed examination for this report. We expect to analyze the effects of aid in the next phase of this research.

that curriculum choice is an outcome that is closely tied to academic ability, family socioeconomic status, aspirations, significant other influence, and personal attitudes. We look only at the association between transition pattern and high school curriculum and make no claims to estimating the effects of curriculum itself independent of these factors that influence curriculum choice.

In considering all of these relationships we restricted ourselves to simple two- or three-variable tabular comparisons because of the relative ease of interpretation and because of time limits of this year's project. We are keenly aware of the limitations of such comparisons, and in our discussion of the relationships we strove to avoid overstating the implications of these tables. Nonetheless, we are also aware that the relationships revealed in simple tables often hold up under more formal examination, and we intend to submit the findings reported here to a more rigorous analysis in the coming year. Our purpose here was limited to examining the surface character of the relationships between these pathways and the background or contextual variables that influence choices in order to check for broad consistency with theoretical predictions and to identify relationships that deserve closer examination in the coming year.

The More Common Pathways

With identification of the transition patterns or pathways completed, we pose the natural questions:

- o What are the more commonly followed pathways?
- o What combinations of degrees earned, delays, interruptions, and attendance sequences are most frequent?

Table 4.1 presents the information available from the Class of '72 and the NLS Youth databases that provides a response to this question. There are indeed a great many alternative pathways through education to work. Using the elements that were identified in chapter 3, we found thirty pathways that each contained at least 1 percent of the sample for either data set. These accounted for the majority of the respondents in the two databases. Eighty-seven and 90 percent of the respondents are accounted for in the Class of '72 and the NLS Youth,

TABLE 4.1

THE RELATIVE POPULARITY OF ALTERNATIVE PATHWAYS THROUGH EDUCATION TO WORK
(PERCENTAGE WITHIN DATA SETS)

		Class of '72	Subtotals	NLS Youth	Subtotals
No postsecondary	0000	24.8	24.8	35.6	35.6
Traditional pathway, no degree	0001	3.6		1.1	
	0002			5.7	
	0003	5.2		6.5	
	0006	1.8		1.0	
	0009	2.5	13.1	1.2	15.5
Vocational degree	0011	.9		1.6	
	0019	2.0			
	1011			.8	
	7011		2.9	1.6	4.0
Community college degree	0022	.8		5.1	
	1022			1.4	
	0029	2.4	3.2		6.5
Four-year degree	0033	10.1		18.0	
	1033			1.2	
	0035			3.1	
	0039	4.1	14.2		22.3
Degree and continuing	0083	.8			
	0093	6.0	6.8		
Interruption and no degree	0103	1.4			
	0105	1.0			
	0106	3.6		1.2	
	0107	2.0			
	0109	2.5	10.5		1.2
Delay and no degree	1001	3.9		1.7	
	1002	2.3		1.7	
	1003	1.5		1.4	
	1009	1.6	9.3		4.8
Delay, interruption, and no degree	1106	1.0			
	1109	1.5	2.5		
		Total 87.3	87.3	89.9	89.9
		100% n = 16,450		100% n = 7,060	

KEY: 1st Digit--Delay

0 No delay
1 Delay
7 Cannot be determined

2nd Digit--Interruption

0 No interruption
1 One or more interruptions

3rd Digit--Degree

0 No degree
1 Vocational-technical degree
2 Community college degree
3 Four-year college or university degree
8 Multiple degrees--classes after last degree
9 Classes after a degree

4th Digit--Sequence

0 Never enrolled
1 Vocational-technical school only
2 Community college only
3 Four-year college or university only
5 Progression
6 Regression
7 Mixture
9 Indeterminate

respectively.* To aid in interpretation, these more common pathways are grouped according to some common characteristics.

The single pathway most often followed is that involving no formal postsecondary education. But it is also the least specifically defined pathway. Table 4.1 shows that 25 percent of the Class of '72 and 36 percent of the NLS Youth followed this pathway. Both of these figures will be reduced somewhat with the passage of time. The reduction for the Class of '72 will probably be very small, because these respondents had seven years to make a start, and the likelihood of starting appears to decrease with the passage of time (there were only 2 percent new starts five years away from graduation and 2 percent more six years away). The NLS Youth percentage will show more change because only 55 percent of this group had time for a delay of a year or more. If they follow the delay pattern of the Class of '72 respondents, the reported percentage of NLS Youth could become even less than that for Class of '72.

The next most frequently followed pathways are those leading to four-year degrees. They comprise, however, only 21 and 22 percent of the two cohorts. The Class of '72 may increase slightly if those with prolonged delays or interruptions successfully complete four-year degrees. Because of the assumption described previously that some participants without degrees would eventually earn them, the NLS Youth percentage may change very little. Respondents with vocational-technical or two-year

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*Technical characteristics of the databases constrain the specification of pathways. These databases are longitudinal, as are the pathways. The results presented in table 4.1 are those available at the time of the last interview, reflecting the respondents' histories up to that point of time. The proportions recorded in the table may shift somewhat as the cohorts mature and do not necessarily reflect the final outcome for each respondent. For the Class of '72, seven years had elapsed since high school graduation, allowing ample time to complete at least a master's program if the respondent had begun school without delay and had no interruptions. In contrast, only 2.4 percent of the NLS Youth had been out of high school for seven years, and only 28.6 percent had had time to graduate from a four-year postsecondary program. The result of this constraint is that some pathways could not be defined for NLS Youth and others are implied rather than observed. These are the percentages where subsequent changes are most likely. Specifically, NLS respondents who had entered a postsecondary program without delay, had not interrupted, and were currently enrolled but had not had sufficient time to graduate were counted as though they would receive a degree.

degrees who earn four-year degrees may offset the number of respondents in pathways 0083, 0093, and 0033 who may now have two-year or vocational degrees but may not complete the four-year degree that, by assumption, was attributed to them.

The next most frequent pathways are those that start without delay, contain no interruptions, and yield no degree even though sufficient time has elapsed. The percentages are 13.1 for the Class of '72 and 15.5 for the NLS Youth. The reasons for the failure of these respondents to complete their programs will be discussed, to the extent the data allow, in a subsequent section.

It is worth repeating here a relationship that emerged during the identification process, that delays and interruptions appear to reduce the likelihood of program completion. The data in table 4.1 clearly outline that relationship. No pathway followed by 1 or more percent of the Class of '72 and resulting in a degree included a delay. Only two pathways, 1022 and 1033, met this criterion in the NLS Youth, but both contain some cases for which degrees have been assumed and final percentages may be smaller. In no case did a pathway containing an interruption and resulting in a degree meet this 1 percent criterion. In contrast, 22.3 percent of the Class of '72 respondents followed pathways containing delays or interruptions and not resulting in completion to a degree. The results are not as clear for the NLS Youth, presumably because insufficient time had elapsed for many of this cohort to experience an interruption, delay, or both, and then graduate.

The table also provides the answer to a question of general interest:

- Of those young people who start a postsecondary program, how many complete it?

When the less common pathways (not shown in table 4.1) are added, 75 percent of the Class of '72 start postsecondary programs and, to date, 65 percent of the NLS Youth also begin pathways that could lead to degrees. Within the time span of the data available 33.4 percent of the Class of '72 and 48.3 percent of the NLS Youth attain degrees. (The NLS Youth figure contains an estimate of potential completion.) The reader should recall that about another 5 percent of the respondents in the Class of '72 data received certificates, but not degrees, from vocational-technical schools. Thus, the total percentage of people in the Class of '72 data who follow credentialed pathways is between 33 percent and 38 percent, depending upon how strictly one wishes to interpret the term "credential."

Despite the recent work by Rumberger and Levin (1983) arguing that skill requirements do not necessarily rise, on average, as a society becomes more technological, these percentages are

rather lower than we would expect a technologically-oriented, rapidly changing society to aim for. Only slightly more than half of those who take any postsecondary education acquire a credential, and that group represents only a little more than one-third of all adults who remained in high school through their senior year. Because of pre-senior year high school dropouts, who are not included in this sample and are even less likely than those in the sample to acquire postsecondary credentials, the proportions earning credentials are even lower for the population as a whole. Previous studies (see for example, Becker 1975 and Olson, White, and Shefrin 1979) have found substantial differences in return to years of college education that culminate in a credential compared to those that do not end with a credential. To the extent that these differences in return reflect productivity differences,* or that the credentials are valid indicators of skill acquisition (defined broadly), there are a great many probably unproductive "false starts" in our postsecondary educational programs. Whether or not these false starts involve student learning that postsecondary programs are not useful for them is not the issue here. Beneficial as it may be from the perspective of private individuals to learn that postsecondary education was not useful for them, from the social point of view the time spent is wasted if the same lesson could have been learned in another, less costly manner. The society must decide how much it is willing to forego in order to preserve the individual freedom to make a false start. Our data estimate the frequency with which such starts have been made during the decade of the 1970s. We also note later in this chapter the prevalence of false starts in this sense among black and Hispanic youth. What requires more detailed examination--and is one concern for our research next year--is whether alternatives to learning-by-doing could have been used to reduce the number of false starts or whether the false starts can be converted into credentialed pathways with better preparation of youth by the high schools. One of the crucial elements in making this further evaluation is how accurately the likelihood of "false starts" could have been predicted based only on information available prior to starting a postsecondary program. The relationships that are discussed in the remainder of this chapter between transition patterns and background characteristics are considered here because they help to throw some (preliminary and non-rigorous) light on issues such as these.

Who Follows Each Path?

In an effort to paint the picture of what appears to influence individuals to follow the different patterns and which

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*For the argument that they do not necessarily reflect productivity differences, see Thurow (1975).

individuals move through them to successful completion, this research considered many possible sources of variation. Where there appears to be a substantial relationship, tables will be presented and highlighted in the discussion. Where no noteworthy differences occur, that fact will be mentioned and the tables will not be included in the text. The tables and the discussion will present findings from the Class of '72 data and from the NLS Youth, when this latter database permits comparable statistics to be generated. As noted earlier, the maturity level of much of this sample is not sufficient to obtain information on some variables, particularly those that relate to events subsequent to completion of the patterns.

Gender

If traditional gender-role stereotypes from the 1950s and 1960s continued to describe young adult behavior throughout the 1970s, then pathways followed should differ substantially between men and women. Women would be expected to start postsecondary programs less frequently than men, and to experience interruptions or follow nondegreed pathways more often than men. To the extent that stereotypes in gender roles are reinforced by parents or relatives, status attainment theory offers a similar prediction. We have noted previously, however, that the Class of '72 data depart from the stereotype. Few women in this sample report delaying or interrupting their education in order to have a family, and very few women report that their principal activity during interruptions is homemaking unaccompanied by a part-time or full-time job.

Gender-role stereotyping also implicitly underlies the human capital theory predictions that women should, on the average, invest in less education than men because projected interruptions in their (women's) work histories will reduce the (tangible) return on their human capital investments. This source of gender difference may be lessening because of recent developments in the law--such as rulings concerning pregnant women, growth of day care centers, sick leave and medical insurance--that may have allowed women to strengthen their labor market attachment. The Class of '72 data (which covers only through 1979) probably do not reflect all of the changes, although the NLS Youth may reflect some of them.

The predictions of the dual-labor market view for gender differences rests on extending the gender-role stereotype to the point that it produces discrimination in hiring by employers. It is argued that this is the reason that women's human capital investments have lower returns than equivalent investments by men. As with the other theories we discussed here, we would expect these restrictions to be less important now than they were in the late 1960s and early 1970s, but probably still sufficient to produce gender-related differences in pathways followed.

With respect to gender, therefore, we are concerned with these questions:

- Do differences in gender significantly influence the patterns followed?
- Do men and women differ in the incidence of interruptions, overall and within types (predegree, postdegree, and nondegree)?
- Do early parental responsibilities reduce the likelihood of pursuing postsecondary education?
- Does early parenting have different impacts for women than for men?

For both the Class of '72 and NLS Youth, men and women differ in their tendencies to follow specific transition patterns (tables 4.2 through 4.5). The differences are most pronounced among the vocational and four-year degreed patterns, though some differences are evident in nondegreed patterns.

In patterns involving attendance at vocational or business schools, men are more likely than women to delay start of a program. Women are more likely than men to follow indeterminate sequences when getting their vocational degrees. This suggests a more frequent incidence of irregularities in women's patterns that is consistent with predictions of the stereotypes. Although more women than men attend vocational schools without getting degrees, the significance of that difference disappears if pathways 0001 and 1001 are combined. These three tendencies can perhaps be summarized by saying that men are more likely, once they start a vocational program, to follow a direct route to a vocational degree.

In patterns leading to four-year degrees, men account for a larger fraction of respondents, but very nearly equal proportions of men and women follow the patterns showing continuing education (0083 and 0093). This finding suggests that among university graduates, women are more likely than men to continue their formal education. This is the area in which recent advancements in women's access to preferred (primary labor market) jobs is probably most widely felt. This is also the group of women most likely to be sensitive to "women's issues" and to be involved actively in the women's movement. It is clear that gender-role stereotypes do not describe this group of women.

Two other differences by gender are noteworthy because they more nearly correspond to the stereotype. The first is that women are more likely than men to attend only community colleges. The differences are not statistically significant for four of the

TABLE 4.2

TRANSITION PATTERN BY GENDER
(PERCENTAGE DISTRIBUTION WITHIN PATTERNS)
CLASS OF '72

		Male	Female
No postsecondary	0000	46.4*	53.6*
Traditional pathway, no degree	0001	37.1*	62.9*
	0002	58.7	41.3
	0003	49.8	50.2
	0006	56.4	43.6
	0009	49.9	50.1
Vocational degree	0011	57.4	42.6
	0019	38.8*	61.2*
	1011	81.1*	18.9*
Community college degree	0022	47.8	52.2
	1022	45.9	54.1
	0029	46.6	53.4
Four-year degree	0033	53.8*	46.2*
	1033	72.8*	27.2*
	0039	54.3	45.7*
Degree and continuing	0083	48.9	51.1
	0093	50.8	49.2
Interruption and no degree	0103	51.7	48.3
	0105	40.8	59.2
	0106	53.0	47.0
	0107	51.0	49.0
	0109	53.0	47.0
Delay and no degree	1001	54.0	46.0
	1002	38.3*	61.7*
	1003	47.9	52.1
	1009	50.5	49.5
Delay, interruption, and no degree	1106	61.9*	38.1*
	1109	55.4*	44.6*
All respondents (n = 16,450)		50.1	49.9

NOTE: Pathway codes are presented in table 4.1.

*Probability < .05 that the observed percentage would occur by chance. A chi-square test with 1 degree of freedom was calculated separately for each cell.

TABLE 4.3

DEGREE AND TYPE OF INTERRUPTION BY GENDER AND APTITUDE
RESPONDENTS WITH TWO OR MORE YEARS ATTENDING POSTSECONDARY
CLASS OF '72

Aptitude	Male								Female							
	Low		Middle		High		All		Low		Middle		High		All	
Percentage experiencing interruptions (base n)																
No delay																
Predegree	12.0	(133)	8.4	(806)	8.7	(1,027)	8.8	(1,966)	9.2	(118)	8.3	(736)	7.9	(987)	8.1	(1,841)
Postdegree	23.7	(133)	32.6	(806)	31.0	(1,027)	31.2	(1,966)	29.0	(118)	39.2	(736)	41.9	(987)	40.0	(1,841)
Nondegree	46.5	(284)	48.8	(710)	57.7	(428)	51.0	(1,422)	49.0	(279)	53.9	(633)	57.9	(365)	54.0	(1,277)
Delayed 1, 2, or 3 years																
Predegree	14	(22)	16.4	(98)	19	(38)	13	(158)	14	(13)	18	(51)	11	(25)	15.4	(89)
Postdegree	13	(22)	22.1	(98)	12	(38)	18.4	(158)	32	(13)	20	(51)	30	(25)	24.6	(89)
Nondegree	46.2	(140)	50.4	(231)	59.6	(94)	50.1	(465)	42.7	(108)	49.8	(194)	61.8	(70)	50.0	(372)
Percentage receiving degrees among those starting without delay (base n)																
Experiencing at least 1 interruption	10.8	(148)	16.4	(414)	26.5	(336)	19.3	(898)	7.4	(148)	15.2	(402)	27.0	(289)	17.9	(839)
Experiencing no interruptions	43.5	(269)	67.0	(1,102)	92.1	(1,019)	75.1	(2,390)	55.0	(249)	69.8	(967)	85.5	(1,063)	75.5	(2,279)
(Postdegree interruptions not considered)																

TABLE 4.4

TRANSITION PATTERN BY RACE/ETHNICITY AND GENDER
(PERCENTAGE DISTRIBUTION WITHIN PATTERN AND GENDER)
CLASS OF '72

		Male			Female		
		Black	Hispanic	White	Black	Hispanic	White
No postsecondary	0000	9.1*	4.3	79.3	9.2*	4.1*	80.8
Traditional pathway, no degree	0001	9.4	2.7	82.0	9.0	4.7	81.4
	0002	5.0	18.1*	76.1	13.9	2.0	76.4
	0003	8.2	3.3	85.4	10.4	2.8	84.6
	0006	12.0*	3.7	79.3	16.1	2.8	71.3
	0009	12.4*	4.9	76.7	14.6	5.8*	76.5
Vocational degree	0011	5.7	0.9	89.8	10.2	--	86.3
	0019	6.7	2.3	87.8	8.3	3.4	85.2
	1011	9.3	1.6	80.6	25.9	--	68.0
Community college degree	0022	10.0	1.3	88.7	9.9	2.4	83.5
	1022	14.3	11.1	74.6	14.8	--	72.5
	0029	3.3*	2.2	87.9	5.5*	4.2	88.5
Four-year degree	0033	6.0	1.4	88.4	8.4*	1.1*	86.5
	1033	4.4	1.2*	90.4	11.0	2.6	73.1
	0039	3.0*	3.4	88.7	8.6	1.6	85.5
Degree and continuing	0083	2.8	1.1	92.8	2.6*	2.8	80.6
	0093	5.2*	0.6*	92.2*	7.9*	1.4*	87.7
Interruption and no degree	0103	6.8	3.7	86.2	3.1*	2.1	93.4
	0105	6.1	1.9	80.4	16.5	7.0*	74.8
	0106	9.2	3.2	83.1	16.2*	4.1	75.5
	0107	9.2	5.2	80.3	18.1*	4.9	73.2
	0109	9.4	9.0	77.5	13.7	3.9	76.7
Delay and no degree	1001	8.6	4.2	81.3	14.6*	3.2	76.6
	1002	14.8*	7.9*	73.7	9.3	5.1	81.4
	1003	7.3	1.5	87.1	10.2	1.9	79.2
	1009	10.4	7.5*	80.7	13.1	2.8	77.3
Delay, interruption, and no degree	1106	12.6	5.4	77.4	17.8	4.5	68.4
	1109	8.0	0.3*	90.0	16.4	2.2	75.3
All respondents (n = 16,450)		7.8	3.7	83.3	10.9	3.2	81.0

NOTE: Pathway codes are presented in table 4.1.

*Probability $\leq$ .05 that the observed percentage would occur by chance. A chi-square test with 1 degree of freedom was calculated separately for each cell.

TABLE 4.5

TRANSITION PATTERN BY RACE/ETHNICITY AND GENDER
(PERCENTAGE DISTRIBUTION WITHIN PATTERN AND GENDER)
NLS YOUTH

		Male				Female			
		Hispanic	Black	Other	Total	Hispanic	Black	Other	Total
No postsecondary	0000	4.1	14.5*	81.4	36.5	5.4	12.7	82.0	33.4
Traditional pathway, no degree	0001	2.3	7.4	90.3	1.1	5.3	12.6	82.2	1.3
	0002	7.3	11.7	81.0	5.0	7.5	12.9	79.6	6.2
	0003	4.8	11.7	83.5	7.1	6.3	16.4	77.3	5.9
	0006	8.2	9.9	81.9	1.0	3.4	26.6*	70.0	1.0
	0009	7.1	8.3	84.6	0.9	4.9	18.8	76.3	1.5
Vocational degree	0011	6.0	5.2	88.8	1.5	3.8	10.1	86.1	1.7
	0019					1.6	15.2	83.2	1.1
	1011					7.1	11.4	81.5	1.0
	7011	3.2	3.1	93.6	1.4	1.7	10.5	87.8	1.8
Community college degree	0022	7.4	8.9	83.7	4.6	5.9	14.3	79.8	5.5
	1022	7.1	8.2	84.7	1.6	2.3	20.4	77.3	1.3
Four-year degree	0033	2.8*	9.2	88.0	17.7	2.9*	10.4	86.6	18.1
	1033	7.3	14.8	77.8	1.5	1.3	7.6	91.1	1.0
	0035	2.5	2.2*	95.3	3.6	1.6	7.0	91.4	2.6
	0039	6.1	3.4	90.5	1.0	3.5	12.1	84.4	1.0
Interruption and no degree	0106	2.0	11.2	86.8	1.3	2.5	23.9*	73.6	1.1
Delay and no degree	1001	2.8	11.6	85.6	2.0	2.5	15.4	82.1	2.3
	1002	9.1	11.5	79.3	1.9	4.2	15.3	80.5	1.6
	1003	4.7	11.9	83.5	1.5	2.7	13.0	84.3	1.3
					91.2				90.5
All respondents (n = 7,060)		4.6	11.3	84.1	100.0	4.7	12.8	82.4	100.0

NOTE: Pathway codes are presented in table 4.1.

*Probability $\leq$ .05 that the observed percentage would occur by chance. A chi-square test with 1 degree of freedom was calculated separately for each cell.

five patterns shown when the patterns are considered individually. But the differences attain statistical significance if the five patterns (0002, 0022, 1022, 0029, and 1002) are combined. Community colleges prepare women for lower level jobs than do four-year colleges or universities. This tendency offers mild support for dual labor market theories.

The second is the overall tendency for women to be more likely than men to obtain no postsecondary education. Whether this difference is a vestige of traditional stereotyping of gender roles or whether it results from inequalities of opportunity for access (which may, in turn, be vestiges of traditional stereotypes) cannot be determined from these data. But it seems important to note that this difference has persisted at least into the mid-1970s.

The strong relationship noted in chapter 2 between degree attainment and interruption warrants a closer examination of the relationship among gender, interruptions, and degree attainment.

Traditional views of gender roles and of motives and opportunities for postsecondary education might lead one to expect that women would be more likely than men to experience interruptions in their postsecondary education. Whether that expectation should extend to both predegree and postdegree interruptions is unclear. But the question has considerable policy and general significance. In order to keep the comparisons sharper, only those respondents who attended some postsecondary education during two years were considered in table 4.3, and the sample was split according to the starting date for the first postsecondary enrollment in order to control for differences in opportunities for interruptions. These restrictions keep these comparisons from merely restating the obvious fact that people with higher achievement experience relatively more interruptions because they are more likely to attend some postsecondary institution.

Within this restricted sample, four tendencies are revealed by the data in table 4.3. Three show great similarity between men and women in this issue. The fourth conforms to sex-role stereotypes but reinforces the observation that women are more likely to go beyond the four-year degree.

First, among both men and women who start postsecondary education without delay, there is a slight tendency for fewer predegree interruptions among respondents with higher composite aptitude test scores.* There is a stronger tendency for higher

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*The aptitude tests are described in more detail on page 76.

aptitude respondents to experience more postdegree or nondegree-related interruptions than for lower aptitude respondents. The postdegree interruptions could be explained by the greater likelihood that higher aptitude students would continue their formal education beyond their first degree. The interruptions for nondegreed people reflect that same sort of greater persistence among the higher aptitude respondents. That is, despite interruptions the higher aptitude students continue to return to school in pursuit of their degree. To determine whether this explanation is correct requires a more detailed investigation of the aspirations, reasons for interruptions, and courses of study of these individuals than we have been able to pursue here.

Second, among both men and women with at least two years in postsecondary education, nondegreed interruptions are significantly more frequent than are postdegree interruptions, which in turn are significantly more frequent than predegree interruptions. This relationship holds overall and for the medium and low composite aptitude groups.

Third, there is no practically significant difference between men and women in the incidence of either predegree or nondegree-related interruptions. If women experience disadvantages relative to men in attaining degrees, it does not appear that those disadvantages are reflected in a higher likelihood of predegree interruption. This absence of differences is maintained when stratifying the sample further by three levels of composite aptitude test score. At all three test score levels, there is no tendency for women to be more likely than men to experience predegree interruptions in their postsecondary education.

Fourth, among people who began their postsecondary education without delay, women are significantly more likely than men to experience postdegree interruptions. This tendency appears when all women are compared to all men (within this restricted subsample of respondents who attended some postsecondary institution). But a closer examination reveals that this overall tendency is especially strong among those in the high aptitude level. This finding does suggest that high-aptitude women may face more difficult problems in continuing their education beyond their first degree than do men with similar academic ability.

We looked at one final aspect of the gender-role stereotyping question. The effect of early parenting or other responsibility for dependents upon the pathway followed could be expected to show up in several ways. It might be expected as an indicator of those who achieve no postsecondary education and those who follow pathways that include delays, interruptions, or unsuccessful termination of pathways potentially leading to degrees. The direction of causation need not concern us here. The pathway percentages are shown in table 4.6.

TABLE 4.6

TRANSITION PATTERN BY DEPENDENTS AS A SENIOR BY GENDER
(PERCENTAGE DISTRIBUTION WITHIN PATTERN AND GENDER)
CLASS OF '72

		Male			Female		
Number of Dependents		0	1	2	0	1	2
No postsecondary	0000	65.1*	5.9*	5.5*	68.4*	4.5*	3.7*
Traditional pathway, no degree	0001	65.8	4.0	6.6	72.7	4.2	2.9
	0002	80.9	4.2	0.7	67.7	6.7	3.4
	0003	74.4	2.3	2.5	77.1	4.0	1.0
	0006	67.7	3.4	6.7*	71.9	2.0	2.5
	0009	75.9	3.6	2.8	68.0	5.0	3.6
Vocational degree	0011	82.6	2.4	2.4	83.2	4.0	1.1
	0019	73.7	4.0	3.6	73.8	0.9*	2.4
	1011	70.5	3.8	5.2	61.4	0.0	0.0
Community college degree	0022	62.6	5.1	1.7	80.7	1.8	1.2
	1022				67.8	4.9	0.0
	0029	76.3	2.8	2.3	80.7	2.3	1.8
Four-year degree	0033	78.2*	1.9*	1.5*	79.6*	0.7*	1.3*
	1033				78.2	0.0	0.0
	0039	81.3*	0.3*	0.9*	77.1	0.8*	1.2
Degree and continuing	0083	87.7	0.0	0.0	75.4	3.9	0.0
	0093	75.1	2.1*	1.0*	80.5	0.5*	1.2
Interruption and no degree	0103	72.0	1.5	5.2	85.2	1.7	0.6
	0105	62.0	5.7	6.6	70.2	4.0	2.9
	0106	73.7	4.2	3.0	78.0	2.4	2.7
	0107	75.9	1.6	3.5	69.0	3.0	3.1
	0109	69.8	2.0	2.7	73.3	3.5	2.8
Delay and no degree	1001	65.1	6.2*	4.0	68.6	6.8*	5.3*
	1002	67.6	8.1*	4.8	67.4	8.4*	2.7
	1003	72.1	3.6	3.1	72.0	1.5	2.5
	1009	68.6	6.4	4.3	85.5	5.8	2.2
Delay, interruption, and no degree	1106	75.2	5.1	3.0	68.7	10.6*	4.3
	1109	65.8	1.4	1.3	66.9	6.0	2.8
All respondents (n = 16,450)		71.6	3.9	3.5	73.1	3.4	2.6

NOTE: Pathway codes are presented in table 4.1.

*Probability $\leq$ .05 that the observed percentage would occur by chance. A chi-square test with 1 degree of freedom was calculated separately for each cell.

For both men and women, there is a tendency for having one or more dependents in the senior year to be positively associated with greater proportional frequency in the no-postsecondary path. The presence of dependents is neutral for pathways through either community college or postsecondary vocational training. At the four-year college level, respondents with dependents are less likely to be represented in the traditional, direct path leading to a degree. The important aspect of this finding for the question of gender-role stereotyping is that it holds for both men and women. The presence of dependents does not appear to have different effects in any consistent and reliable way upon which pathways are followed by members of either gender. Dependents appear to affect the pathways followed in similar ways for both. This seems contrary to the expectation if traditional gender roles were dominant in this cohort. It is clearly an issue that requires further investigation.

These data tend overall to conform to the stereotypes as far as relative likelihood of following specific sequences. Women are more likely to follow sequences involving no postsecondary education, business or vocational-technical school, or community colleges, and they are less likely to attend four-year colleges or universities. But in other respects the stereotypes appear to be dissolving for women. This is illustrated by finding no gender differences in predegree or nondegree interruptions and although women conform to the stereotype in being more likely to experience postdegree interruptions, that relationship holds only among high-aptitude people, and its conformity to stereotype is balanced if not more than offset by the greater likelihood of women continuing beyond the four-year degree (when the comparison is restricted to those who earn at least four-year degrees).

Race/Ethnicity

Human capital, status attainment, and dual labor market theories can be interpreted in a manner consistent with the conventional wisdom concerning racial/ethnic differences in postsecondary education. Two principal generalizations seem to be rather widely accepted. First, blacks and Hispanics are less likely than whites to pursue postsecondary education, especially at four-year colleges or universities. Second, among blacks and whites of similar socioeconomic background and academic aptitude, blacks are more likely than whites to attend four-year colleges or universities. The simple tabulations we examined tend to support both generalizations and to suggest some interesting extensions that are worth further investigation.

The result that stands out most clearly in these data in tables 4.4 and 4.5 is that blacks are overrepresented in the pathways showing no postsecondary education or yielding no degree. But black men and women differ in their tendencies in

this respect. In each data set, black men follow the pathway of no postsecondary education in significantly greater proportion than they appear in the subsample of men. Black women, in contrast, follow this pathway in the same or lower proportions than their proportion in the subsample of women. Black women are relatively more likely to follow nondegreed pathways than is suggested by their proportion in the subsample of women. Black men show a similar tendency, but it is less pronounced and less consistent than for black women.

These results are interesting because they conform to the expectation of the dual labor market, status attainment, and human capital theories and they are consistent with the view that inequalities in access to postsecondary education had not been entirely eliminated by the mid to late 1970s, despite new aid programs and increases in the funding of existing aid programs. A somewhat more disturbing aspect of these data is their implication that even where access to educational opportunities is achieved, blacks are less likely than whites to attain the credential associated with successful completion of the program. Whether this lower rate of degree attainment occurs because relatively fewer blacks than whites are adequately prepared for their postsecondary education, because blacks are more likely than whites to encounter financial obstacles during their education that impede successful program completion, or because of some other factors cannot be identified here. But this is clearly a question that deserves further investigation.

Three other findings are worth noting, but are a bit more difficult to relate to theoretical predictions. First, Hispanics are somewhat more likely to follow pathways involving only community colleges. This result may be attributable, at least in part, to the important role of community colleges in the California educational system.

The second tendency is that black women are much more likely than other respondents, relative to their proportion in the population, to attend vocational schools with a delay. This tendency may have implications for the marketing strategies of vocational schools; it may also reflect limitations of opportunity for black women.

The third tendency is for blacks and Hispanics of either gender to be much less likely than would be expected to follow patterns leading either to four-year degrees or to degrees with continuing education. This confirmation of a well-known fact probably reflects unequal opportunities in access to four-year institutions. These unequal opportunities persist even in the presence of the financial aid programs of the 1970s and the availability of community colleges.

The impression conveyed by these data is consistent with the view that inequalities in access persist for black or Hispanic youth. The further impression conveyed is that even when access is achieved, these minority youth have been less well-prepared to take advantage of the opportunity.

Whatever the reasons for these differences among racial/ethnic groups, it is important to note that the differences do not appear to be fundamentally racial in nature. When the sample is stratified according to the socioeconomic status of the respondent's family, the differences by racial/ethnic group tend to disappear, and in three cases the overall relationships are even reversed. First, among low SES men and women, blacks of either gender are significantly less likely than expected to follow the path of no postsecondary education. Second, middle SES black women are similarly less likely than other middle SES women to have no postsecondary education. Finally, low SES black women are much more likely than expected to follow four-year degreed pathways. The overall relationships noted previously emerge despite these exceptions because in this sample blacks comprise about 22 percent of the low SES quartile, about 6 percent of the middle quartile, and less than 3 percent of the top quartile.

These connections among pathways, race/ethnicity, and SES are clearly worthy of more intensive investigation.

Family Socioeconomic Status

The status attainment theory suggests the importance of significant others in postsecondary educational decisions. The socioeconomic status (SES) of the family (a scale combining parents' occupational status and measures of the learning environment in the home) is important both because it shows the example parents set for their children and because it is a proxy for both constraints (or their absence) on children's social aspirations and the access to social opportunities. The status attainment theory predicts, and a substantial body of research confirms in other cases, that higher family SES is associated with higher educational aspirations and attainment among the family's children. Thus, we consider this question:

- Does the family's socioeconomic status continue to show a strong positive correlation with the level of educational attainment that is implied in the patterns of transition?

The socioeconomic status of individuals' families prior to high school graduation differentiates importantly among those who follow the different pathways (tables 4.7 and 4.8). When the SES scales for each data set are divided into three categories--low,

TABLE 4.7

TRANSITION PATTERN BY SOCIOECONOMIC STATUS COMPOSITE
(PERCENTAGE DISTRIBUTION WITHIN PATTERNS)
CLASS OF '72

		Lowest Quartile	Middle Quartile	Highest Quartile	Unclassified
No postsecondary	0000	40.6*	52.0*	7.0*	0.4
Traditional pathway, no degree	0001	28.9*	61.4*	9.4*	0.2
	0002	25.2	53.8	21.0	0.0
	0003	19.5	49.8	30.6	0.0
	0006	19.1*	52.7	28.0	0.2
	0009	26.5	50.7	22.5	0.3
Vocational degree	0011	29.5	53.7	16.8	0.0
	0019	21.2	55.3	23.5	0.0
	1011	26.5	49.1	24.4	0.0
Community college degree	0022	12.4*	62.6*	24.2	0.8
	1022	32.2	39.4	28.4	0.0
	0029	15.1*	56.3*	28.6	0.0
Four-year degree	0033	9.3*	42.0*	48.7*	0.0
	1033	22.3	52.5	25.2	0.0
	0039	9.4*	42.8*	47.8*	0.0
Degree and continuing	0083	11.3*	45.8	42.9*	0.0
	0093	8.8*	34.6*	56.4*	0.2
Interruption and no degree	0103	15.2*	42.0	42.7*	0.0
	0105	21.2	53.0	25.9	0.0
	0106	19.5*	47.7	32.8*	0.1
	0107	17.6*	50.1	32.4*	0.0
	0109	20.2*	46.0	33.8*	0.0
Delay and no degree	1001	35.0*	55.5*	9.4*	0.1
	1002	30.6*	55.8	13.6*	0.0
	1003	26.6	52.8	19.9	0.7
	1009	26.6	61.4*	11.9*	0.0
Delay, interruption, and no degree	1106	25.2	58.3	16.5*	0.0
	1109	26.6	51.8	21.6	0.0
All respondents (n = 16,450)		24.9	49.6	25.3	0.2

NOTE: Pathway codes are presented in table 4.1.

*Probability $\leq$ .05 that the observed percentage would occur by chance. A chi-square test with 1 degree of freedom was calculated separately for each cell.

TABLE 4.8

TRANSITION PATTERN BY SOCIOECONOMIC STATUS COMPOSITE
(PERCENTAGE DISTRIBUTION WITHIN PATTERNS)
NLS YOUTH

		Lowest Quartile	Middle Quartile	Highest Quartile
No postsecondary	0000	36.2*	56.3*	7.5*
Traditional pathway, no degree	0001	30.8	58.3	11.0*
	0002	19.9	54.7	25.4
	0003	17.3*	48.0	34.7*
	0006	15.1	58.2	26.6
	0009	16.1	55.8	28.2
Vocational degree	0011	24.4	67.3*	8.3*
	7011	29.7	62.0	8.2*
Community college degree	0022	18.8	54.3	26.9
	1022	20.3	56.9	22.8
Four-year degree	0033	10.0*	36.5*	53.5*
	1033	17.6	54.2	28.2
	0035	8.9*	48.1	43.0*
	0039	7.4*	41.5	51.1*
Interruption and no degree	0106	6.4*	53.0	40.7*
Delay and no degree	1001	30.4	58.2	11.4*
	1002	25.5	59.5	14.9*
	1003	16.7	57.6	25.7
All respondents (n = 7,060)		23.7	51.7	24.6

NOTE: Pathway codes are presented in table 4.1.

*Probability $\leq$ .05 that the observed percentage would occur by chance. A chi-square test with 1 degree of freedom was calculated separately for each cell.

middle, and high--this differentiation is clearly illustrated.* Both low and middle SES respondents are more heavily represented in the no-postsecondary education pathway than in the sample as a whole. The low SES respondents are by far the more overrepresented group. Proportionally fewer low and middle SES people follow the four-year pathways and proportionally more follow the vocational pathways, both those leading to degrees and those terminating prior to degrees.

In contrast, a very small portion of high SES individuals undertake no postsecondary education. They are also underrepresented in vocational pathways. They are frequently found, above expectations, in the interrupted pathways, but less often than expected in the delayed pathways. Almost twice as many as expected from their numbers in the population follow a traditional pathway to a four-year degree.

The relationship of SES to community college pathways is not as clear-cut. These pathways appear to serve proportionally more middle SES students in a direct pathway from high school to college and without delay to a degree. Proportionally more low SES respondents start community college after a delay and complete a program, but also proportionally more follow a delayed path that does not lead to completion. The results are similar in both the Class of '72 and the NLS Youth.

These results are consistent with the findings of much previous research, that higher SES in a family accompanies higher levels of educational attainment among that family's children. They also confirm that community colleges serve primarily middle and lower SES individuals. The thrust of the results is to reemphasize what has often been noted before: that there is a strong (but somewhat flexible) tendency in the U.S. for socioeconomic status to be perpetuated from generation to generation. Judgments concerning inequalities in access to postsecondary education across various socioeconomic levels require a more sophisticated analysis that controls at least for aptitude (or achievement) and possibly for family income and individual preferences.

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*The SES scale is a weighted sum of father's years of education, mother's years of education, Duncan score for father's and/or mother's occupation, and measures of the learning environment in the home. See Riccobono et al. 1981, and Campbell, Orth, and Seitz 1981, for the details of that construction. The scale was divided into groups here by picking scores that divided the top and bottom quartiles of the sample from the middle half of the sample.

Aspirations and Significant Other Influence

Aspirations and significant others' influence are emphasized by the status attainment approach as key determinants of the level of educational attainment. If the status attainment approach is correct, these variables provide significant clues to determining the transition patterns followed, and any efforts by public educational policy to affect postsecondary educational choices must take cognizance of these channels. The specific questions considered concerning aspirations are these:

- To what extent do the actual patterns followed conform to aspirations?
- To what extent do they show the fulfillment or the nonfulfillment of aspirations?
- To what degree does any incongruity between eventual educational attainment and early educational aspirations reflect later changes in aspirations rather than unforeseen circumstances?

Senior educational aspirations (table 4.9), senior occupational aspirations (table 4.10), and the time of decision concerning college attendance (table 4.11) show that indecision during the senior year in high school is most prevalent among those who subsequently take no postsecondary education. On all three measures, the no-postsecondary group is significantly less likely than average and is consistently among the patterns least likely to express any goal. Similarly, those who experience an interruption without getting a degree or those who delay postsecondary schooling are also among those who were least likely to express a goal when asked as seniors. Even those seniors who later get vocational, community college, or four-year degrees but who delay starting their postsecondary education are among the least likely to express a goal. All of these groups are quite similar in the degree of their uncertainty. Those students who attend four-year institutions, and especially those who get university degrees, are most likely to express goals on each of these measures.

The overall level of aspirations is high, and aspirations appear to be strongly associated with eventual educational attainment. Over 37 percent of the sample (two-thirds of those expressing a goal) wanted to complete a four-year program. Over 20 percent wanted to attend graduate or professional school. These high aspirations for education are consistent with the high aspirations expressed for occupations. Over one-fourth of the sample aspired to professional occupations. Among those who later received university degrees, over half aspired to professional jobs, over 40 percent aspired to graduate or professional education, and about two-thirds aspired to university or higher levels of education.

TABLE 4.9

EDUCATIONAL ASPIRATIONS AS A SENIOR BY TRANSITION PATTERN
(PERCENTAGE DISTRIBUTION WITHIN PATTERN)
NLS '72

		< H.S.	High School Graduate	Vocational-Technical	Junior College	University	Graduate/ Professional	Unknown
No postsecondary	0000	0.7	7.9*	18.7*	5.9	8.6*	3.9*	54.3
Traditional pathway, no degree	0001	0.1	1.3*	22.8*	6.0	9.4*	3.7*	56.8
	0002	0.4	0.0*	12.2	7.3	18.7	13.4	48.0
	0003	0.2	0.6*	3.2*	4.5	23.6*	28.9*	39.0
	0006	0.0	0.2*	4.5*	7.1	23.8*	23.6	40.8
	0009	0.2	3.6	8.1	5.0	17.1	14.0*	52.0
Vocational degree	0011	0.0	2.5	31.0*	5.8	9.5*	10.3*	40.9
	0019	0.2	0.7*	10.0	8.3*	21.5*	13.9*	45.5
	1011	0.0	2.5	25.6*	6.0	12.3	8.5	45.1
Community college degree	0022	0.0	0.0*	4.2*	9.7*	30.0*	16.8	39.3
	1022	0.0	4.5	6.6	5.8	16.6	23.9	42.6
	0029	0.0	1.1*	6.5*	9.1*	29.2*	21.5	32.6
Four-year degree	0033	0.2	0.0*	0.4*	0.8*	22.4*	46.9*	39.3
	1033	0.0	1.6	5.7	2.3	20.8	27.1	42.5
	0039	0.0	0.2*	2.1*	1.9*	21.6*	41.6*	32.6
Degree and continuing	0083	0.0	0.0*	1.7*	4.0	29.0*	35.4*	29.8
	0093	0.0	0.1	0.2	0.1	20.0	49.6	29.9
Interruption and no degree	0103	0.0	0.4*	1.9*	1.0*	20.8	40.4*	35.5
	0105	0.0	0.4*	18.1*	7.2	12.2	13.0*	49.0
	0106	0.0	1.0*	3.6*	4.9	22.6*	29.9*	37.9
	0107	0.3	0.2*	4.1*	3.5	20.2	27.2*	44.6
	0109	1.2	1.6	5.5	4.4	18.4	24.0	44.9
Delay and no degree	1001	0.3	6.9*	21.7*	5.9	7.8*	6.5*	50.9
	1002	0.4	4.4	16.0*	9.2*	13.3	9.3*	47.4
	1003	0.3	3.0	17.1*	5.4	20.2	14.9*	39.1
	1009	1.3*	6.1*	19.3*	5.6	15.0	7.2*	45.4
Delay, interruption, and no degree	1106	0.0	1.6	11.8	7.5	18.2	14.5	46.3
	1109	1.0	2.2	13.4	6.0	18.0	11.4*	48.0
All respondents (n = 16,450)		0.4	3.2	10.7	4.8	16.6	20.6	43.8

NOTE: Pathway codes are presented in table 4.1.

*Probability $\leq$ .05 that the observed percentage would occur by chance. A chi-square test with 1 degree of freedom was calculated separately for each cell.

TABLE 4.10

OCCUPATIONAL ASPIRATIONS AS SENIORS BY TRANSITION PATTERNS
(PERCENTAGE DISTRIBUTION WITHIN PATTERN)
CLASS OF '72

		Clerical	Craft	Farm	Home	Laborer	Manufacturer	Military	Operative	Professional	Proprietor	Private Service	Sales	Service	Technical	Unknown
No postsecondary	0000	14.7*	7.7*	1.3	4.1*	2.5*	1.1*	1.2	2.4*	7.3*	1.0	1.2	2.6*	3.9*	2.8*	46.3
Traditional pathway, no degree	0001	14.7*	9.2*	1.1	1.0	2.1	1.0	1.1	1.0	12.2*	0.4	0.6	1.2	8.9*	4.2	41.2
	0002	8.4	8.1	0.5	0.8	4.8*	3.9	1.8	0.3	14.9*	1.4	6.6*	0.4	2.2	3.8	42.1
	0003	7.3	2.2*	1.3	1.0*	1.0	2.6	0.9	0.7	40.2*	1.0	1.2	2.5	1.5	4.2	32.5
	0006	7.2	3.4	1.2	0.0*	0.9	3.7*	0.0*	1.5	34.1*	2.6*	1.7	2.7	0.5*	4.3	36.1
	0009	9.3	5.4	1.4	2.2	0.6	2.8	1.1	0.7	18.0*	2.1	0.5	2.2	2.5	4.4	46.7
Vocational degree	0011	14.8*	11.8*	1.1	0.0	3.9	1.1*	0.6	2.5	16.1*	1.8	0.6	0.3	0.4	18.4*	26.5
	0019	9.6	4.5	2.2*	0.4*	1.8	0.7	1.5	0.4	29.5	0.8	0.0*	1.6	2.8	10.7*	33.4
	1011	1.6	10.6	2.3	0.0	2.9	8.9*	1.8	2.2	12.0*	3.5	0.0	0.0	3.4	8.7	42.1
Community college degree	0022	10.9	1.5	1.3	0.0	0.8	2.2	0.0	4.0*	32.8	1.0	3.0	3.4	2.1	6.5	29.6
	1022	4.6	0.0	0.0	0.0	4.3	6.3	9.9*	0.0	14.0	3.9	2.3	4.1	4.5	9.2	36.8
	0029	8.5	1.9*	1.6	0.8	0.5	3.8*	0.2*	1.1	39.9*	0.9	1.7	2.4	0.9*	8.1*	27.6
Four-year degree	0033	2.3*	0.7*	0.7	0.7*	0.7*	3.0*	0.6*	0.9	58.8*	0.4*	1.0	1.3	1.1*	2.8*	25.2
	1033	1.4*	0.0	0.6	6.0*	0.0	2.0	0.0	1.1	36.4	1.1	3.8	3.5	0.0	1.4	42.5
	0039	3.2*	1.1*	1.0	0.5*	1.2	3.4	1.2*	1.4	55.6*	1.1	1.0	0.8*	1.2*	3.0	26.6
Degree and continuing	0083	6.0	2.3	0.0	0.0	0.0	3.5	0.9	0.9	43.0*	2.2	2.4	3.0	2.3	3.6	29.8
	0093	1.3*	0.9*	0.5	0.4*	0.9	2.2	1.6	0.8	60.1*	0.3*	1.1	0.6*	0.5*	1.9*	26.9
Interruption and no degree	0103	5.1*	1.8*	1.4	1.1	2.2	3.7	1.8	0.8	49.3*	0.3	1.1	0.2	0.4*	4.2	26.7
	0105	9.2	5.8	0.0	0.4	0.0	0.0	0.0	1.0	28.5	0.6	1.8	1.7	7.2*	5.0	38.7
	0106	5.6*	1.6*	0.8	1.4	1.2	2.2	0.7	1.2	39.8*	1.4	2.1	1.9	2.0	5.8*	32.2
	0107	6.3	2.3*	0.3	0.6	0.0*	1.9	2.1	0.0*	35.8*	1.6	2.6	2.2	1.0	4.1	39.4
	0109	6.9	3.2	1.2	1.0	1.4	1.6	1.9	0.9	30.9	0.7	1.6	0.9	1.6	5.7	40.6
Delay and no degree	1001	11.5*	9.2*	1.6	3.5*	3.0*	2.2	2.5*	2.2	9.6*	1.1	2.7*	1.9	3.0	5.0	40.9
	1002	16.1*	8.4*	1.2	3.3*	2.2	1.5	0.9	0.4	14.3*	1.7	1.3	1.4	2.5	2.1	42.7
	1003	10.6	7.4	1.8	1.6	2.0	2.6	2.7	1.1	21.4*	1.0	1.9	1.4	1.5	4.3	38.5
	1009	12.1	6.8	0.9	3.1	0.9	1.8	2.4	3.4*	14.2*	0.8	1.2	4.8*	1.8	5.6	40.3
Delay, interruption, and no degree	1106	12.0	6.8	1.3	2.0	1.2	1.6	5.0*	0.0	13.0*	4.0*	5.8*	2.4	3.0	4.4	37.6
	1109	7.7	4.3	0.0	1.0	2.1	1.8	6.4*	0.3	20.6*	0.2	4.3*	2.0	2.8	5.0	41.4
All respondents (n = 16,450)		9.1	4.8	1.0	1.9	1.6	2.0	1.4	1.4	28.1	1.1	1.4	1.9	2.6	4.0	37.4

NOTE: Pathway codes are presented in table 4.1.

*Probability $\leq$ .05 that the observed percentage would occur by chance. A chi-square test with 1 degree of freedom was calculated separately for each cell.

TABLE 4.11

YEAR OF COLLEGE DECISION BY TRANSITION PATTERN
(PERCENTAGE DISTRIBUTION WITHIN PATTERN)
CLASS OF '72

		Before Tenth	During Tenth	During Eleventh	During Twelfth	Undecided at Twelfth	Expected After High School	Unknown
No postsecondary	0000	20.1*	6.8	13.1*	22.4*	30.3*	3.4*	3.9
Traditional pathway, no degree	0001	20.0*	9.3	17.2*	30.9*	18.6	2.0	2.0
	0002	30.0*	6.4	10.8	28.0*	18.5	3.1	3.2
	0003	51.1*	9.8*	13.8	16.8	5.0*	1.4	2.1
	0006	46.3	11.3*	11.2	21.3	6.3*	1.2	2.5
	0009	39.2	4.7	12.3	21.4	16.7	3.4	2.4
Vocational degree	0011	23.0*	8.5	26.0*	31.7*	9.5*	0.6	0.7
	0019	45.4	9.0	17.7	17.2	7.4	1.0	2.2
	1011	21.3*	6.8	25.8*	23.8	14.8	3.4	4.0
Community college degree	0022	53.7*	10.1	12.2	15.0	4.3*	0.0	4.8
	1022	20.4	10.2	0.0	27.8	39.5*	0.0	2.2
	0029	55.4*	7.6	13.3	18.3	3.9*	0.6	1.0
Four-year degree	0033	77.4*	7.2	6.9*	5.6*	1.4*	0.1*	1.3
	1033	51.2	3.6	10.6	15.0	19.6	0.0	0.0
	0039	73.7*	7.1	8.8*	6.7*	3.0*	0.3*	0.5
Degree and continuing	0083	66.8*	10.4	6.7	9.0*	5.0*	1.4	0.8
	0093	80.0*	6.6	5.7*	4.1*	1.5*	0.3*	1.7
Interruption and no degree	0103	64.1*	4.9	13.8	11.5*	2.3*	1.7	1.8
	0105	32.6	5.4	16.4	27.3*	10.6	2.3	5.4
	0106	55.4*	8.4	12.7	17.0	4.2*	0.9*	1.3
	0107	52.4*	8.0	12.5	13.5	10.9*	1.2	1.7
	0109	42.4	4.2*	14.5	22.8*	11.4*	3.3	1.3
Delay and no degree	1001	19.7*	7.1	14.1	22.3*	30.5*	3.5*	2.7
	1002	18.0*	7.8	16.0*	26.6*	27.3*	2.1	2.2
	1003	20.9*	9.0	8.0	18.0	33.2*	8.9*	2.0
	1009	20.2*	4.4	11.4	25.4*	33.1*	3.0	2.5
Delay, interruption, and no degree	1106	28.2*	4.6	6.8	25.8*	26.7*	5.7*	2.2
	1109	24.1*	6.9	11.1	20.8	26.4*	8.4*	2.4
All respondents (n = 16,450)		41.4	7.2	11.9	18.2	16.5	2.3	2.4

NOTE: Pathway codes are presented in table 4.1.

*Probability $\leq$ .05 that the observed percentage would occur by chance. A chi-square test with 1 degree of freedom was calculated

Community college is not a popular level of educational aspirations. Less than 5 percent of the full sample expressed community college as their educational goal. It is expressed as a goal with about equal frequency by all groups except those who subsequently obtain university degrees. The groups that aspire to community college most frequently are those that immediately begin postsecondary education and subsequently attain at most two-year degrees. Thus, there is some congruity between aspiration for community college-level education and attainment of that level. But community college is not a popular option even among those who eventually get two-year degrees. Over 40 percent of those who get only two-year degrees aspired to at least a university education. Just under 10 percent of them aspired only to community college education. Completion of just a two-year degree could reflect either a considerable change in aspirations or an unanticipated or unavoidable interruption in plans. The answer appears to be unanticipated changes in plans or unavoidable interruptions rather than changes in aspirations, because in 1979 over 60 percent of those who had attained only junior college degrees still expressed aspirations for bachelor's or higher-level degrees (not shown).

Among those who eventually attended only vocational or technical schools, more than 25 percent aspired exactly to that level as high school seniors and generally less than 30 percent aspired to university or higher-level degrees. Seven years later, less than 10 percent aspired to university or college degrees (not shown). It would appear either that the postsecondary vocational and technical schools are performing a service that meets the needs of their clientele or that the clientele has generally lower postsecondary educational aspirations than others within their cohort (and those aspirations do not increase as the students attend vocational or technical schools). Comparisons of the aspirations at 1972 and 1979 (not shown) suggest both that aspirations levels fall rather than rise for this group and that the initial aspirations level is somewhat lower than average to begin with.

Occupational aspirations are concentrated in a few occupational categories. Among the categories specified in the interviews, professional jobs are aspired to by three times as many seniors as any other category. The second largest category is clerical jobs, and that in turn is twice as frequently expressed as any other category. Next come craft and technical jobs, which are again nearly twice as popular as the next echelon of aspirations. There is a rough correspondence between occupation aspired to and attendance at only vocational or technical schools. Those students who eventually attend only vocational or technical schools are somewhat more likely than other students to aspire to clerical, craft, and technical jobs, and they are least likely to aspire to professional jobs.

The following questions were considered that concern significant others' influence:

- Which of the significant others have the greatest impact on choice of postsecondary education?
- What relationship exists between choice of transition pattern and the source of significant other influence?
- Is policy to influence postsecondary choices likely have the greatest effect by working through teachers and counselors or should it focus on trying to operate directly on students or through parents and peers?

Among those having relatively little impact in the early 1970s were the clergy, state employment service officers, and school principals, although these influences were important for very small proportions of the sample. We focuses on four general sources of influence: parents (table 4.12), teachers and counselors (tables 4.13 and 4.14), peers, and other adults (including relatives outside the immediate family). The least influential among those four groups, according to seniors, was teachers and counselors, that group over which public policy is able to exert the most direct influence. Even relatives outside the immediate family and nonrelated adults were reported to be influential more often than were teachers and counselors.* Those students who delayed and never recieved a degree and those who attended no postsecondary institutions were the least likely to report great influence by teachers or by counselors and the most likely to report no influence at all from those sources. For the most part, those students who acquired university degrees and continued their education were the most likely to report great influence by their teachers. This degree of influence is to be expected within this group of students.

The direction of teacher influence is predominantly in agreement with the eventual level of educational attainment. That is, those students who acquired university or higher degrees were significantly more likely than the sample as a whole to report that their teachers had encouraged them to attend college. Those students who delayed their postsecondary attendance and those who never attended postsecondary institutions were, on the

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*To be precise, students report that there is usually some relative outside the family or some nonrelated adult who is influential more often than they report that teachers or counselors are influential.

TABLE 4.12

TRANSITION PATTERN BY PARENTS' INFLUENCE
(PERCENTAGE DISTRIBUTION WITHIN PATTERNS)
CLASS OF '72

		None	Some	Great
No postsecondary	0000	10.4*	38.5	27.9*
Traditional pathway, no degree	0001	6.1	39.5	33.1
	0002	6.7	32.4	44.4*
	0003	7.0	37.6	36.3
	0006	6.3	32.5	40.2
	0009	5.6	36.2	39.0
Vocational degree	0011	2.8*	47.4*	38.3
	0019	5.8	38.5	35.2
	1011	15.2*	19.9*	42.7
Community college degree	0022	1.5*	31.2	47.1*
	1022	17.2*	24.1	38.9
	0029	5.0	38.0	40.3*
Four-year degree	0033	3.3*	33.8*	44.7*
	1033	15.0*	40.4	15.8*
	0039	2.7*	37.4	41.6*
Degree and continuing	0083	6.0	36.8	40.6
	0093	3.3*	32.3*	44.8*
Interruption and no degree	0103	6.0	35.1	42.4*
	0105	7.1	38.5	30.6
	0106	6.2	39.7	36.7
	0107	5.3	36.9	35.9
	0109	7.4	34.0	36.6
Delay and no degree	1001	11.3*	41.5	25.8*
	1002	10.5*	42.4	27.2*
	1003	9.3	42.6	25.7*
	1009	14.3*	39.2	31.4
Delay, interruption, and no degree	1106	11.1	45.8	27.9
	1109	10.4	39.5	23.4*
All respondents (n = 16,450)		7.5	37.6	34.3

NOTE: Pathway codes are presented in table 4.1.

*Probability < .05 that the observed percentage would occur by chance. A chi-square test with 1 degree of freedom was calculated separately for each cell.

TABLE 4.13

TRANSITION PATTERN BY TEACHER INFLUENCE
(PERCENTAGE DISTRIBUTION WITHIN PATTERNS)
CLASS OF '72

		None	Some	Great
No postsecondary	0000	50.8*	19.3*	5.9*
Traditional pathway, no degree	0001	48.6	23.1	6.8
	0002	55.3	20.8	7.4
	0003	45.9	24.8	9.9
	0006	45.5	22.4	9.7
	0009	48.9	24.0	7.6
Vocational degree	0011	55.6	23.9	7.0
	0019	46.8	24.0	8.6
	1011	43.3	29.3	5.1
Community college degree	0022	47.4	23.4	7.7
	1022	50.8	15.4	8.5
	0029	48.3	26.3	9.0
Four-year degree	0033	42.4*	28.5*	10.7*
	1033	51.8	17.5	2.1
	0039	45.4	28.0*	9.0
Degree and continuing	0083	44.4	27.1	11.9
	0093	42.7*	25.7	12.1*
Interruption and no degree	0103	44.9	21.7	16.3*
	0105	42.0	22.2	11.3
	0106	45.9	25.0	10.2
	0107	41.2	26.4	9.6
	0109	47.4	20.4	9.5
Delay and no degree	1001	51.2	19.2	7.7
	1002	52.5	22.4	5.0*
	1003	52.6	17.5	7.4
	1009	51.9	22.8	9.0
Delay, interruption, and no degree	1106	52.0	26.3	5.4
	1109	50.3	16.8*	3.6*
All respondents (n = 16,450)		48.0	22.9	8.1

NOTE: Pathway codes are presented in table 4.1.

*Probability < .05 that the observed percentage would occur by chance. A chi-square test with 1 degree of freedom was calculated separately for each cell.

TABLE 4.14

TRANSITION PATTERN BY TEACHER INFLUENCE ON COLLEGE ATTENDANCE
(PERCENTAGE DISTRIBUTION WITHIN PATTERNS)
CLASS OF '72

		Discourage	Neither	Encourage
No postsecondary	0000	4.0*	35.8*	36.4*
Traditional pathway, no degree	0001	2.8	32.0*	43.1*
	0002	2.0	26.0	55.3
	0003	0.8*	15.5*	64.6*
	0006	2.0	19.4*	57.9
	0009	1.6	31.8*	46.2
Vocational degree	0011	3.7	44.2*	38.8*
	0019	1.6	23.0	55.0
	1011	3.0	26.9	47.8
Community college degree	0022	0.0	12.9*	66.8*
	1022	0.0	26.0	54.1
	0029	0.3*	19.6*	63.3*
Four-year degree	0033	0.2*	15.1*	66.4*
	1033	0.0	17.6	53.7
	0039	0.7*	16.4*	64.4*
Degree and continuing	0083	0.0	18.3	65.2*
	0093	0.3*	13.4*	6.4*
Interruption and no degree	0103	1.0	14.6*	68.0*
	0105	2.2	24.5	49.5
	0106	1.6	21.2*	59.5*
	0107	0.5	14.0*	63.2*
	0109	1.0	19.9*	57.3
Delay and no degree	1001	2.7	36.3*	38.7*
	1002	3.4	30.0	46.9
	1003	2.2	33.0*	42.8
	1009	3.2	35.2*	46.3
Delay, interruption, and no degree	1106	0.9	30.0	53.3
	1109	3.6	27.4	42.3*
All respondents (n = 16,450)		2.0	25.7	51.4

NOTE: Pathway codes are presented in table 4.1.

*Probability < .05 that the observed percentage would occur by chance. A chi-square test with 1 degree of freedom was calculated separately for each cell.

whole, significantly less likely than the entire sample to report teacher encouragement to attend college.

The influence of parents reported as of the senior year in high school seems to reveal a plateau in parental influence that reflects level of formal postsecondary attainment. Parents were reported to have the greatest influence among those students who eventually received university or community college degrees. The reported influence is about the same for most patterns reflecting a community college or higher degree. They had slightly less influence among those who started immediately but had an interruption and never acquired any degree and the least influence among those who delayed and those who never attended postsecondary institutions.

Close friends exerted an influence on postsecondary attendance decisions more than twice as frequently as did teachers or counselors. But those students who acquired four-year degrees were less likely than others to give a prior report of effects of close friends on their decisions. Overall, friends were reported as an influence about two-thirds as often as parents, a fraction which seems surprisingly high.

The timing of postsecondary educational decisions is important in determining whether and to what extent teachers or counselors can influence these decisions. Thus, we also considered briefly the data that were available to address these questions:

- Must attempts to influence decisions to attend a postsecondary institution be made before some critical age level?

- Are many students undecided as late as the senior year, or is the sophomore year already too late for schools to have a significant impact on those choices?

- Does the potential for exerting policy influence vary with the type of pattern students are most likely to follow? That is, have students in the past who followed some transition patterns tended to make the decision, on the average, significantly earlier or later than those who chose other transition patterns?

Although there are systematic differences in the age at which college attendance decisions are made, the data in table 4.11 show clearly that most college attendance decisions are made early. Nearly half of those in the sample said that their decisions on college attendance were made before or during the tenth grade. About one-third postponed the decisions until twelfth grade or later. But among those students who eventually did attend universities and earn four-year degrees, more than 80

percent had made their attendance decisions before or during the tenth grade. Note also that of those who either did not attend postsecondary schools at all or attended without receiving a degree, more than half were apparently undecided as late as the start of twelfth grade.

These percentages carry two implications for counseling. First, to the extent that postsecondary education is inappropriate and should be discouraged for some students, either counselors must discourage the students not later than the sophomore year or they will have to convince the students to change their own decisions. The question, however, is whether teachers or counselors can know as early as the sophomore year that college is inappropriate. Other countries make the determination even earlier, but it is not clear that the United States should follow such examples. Second, to the extent that some students decide, inappropriately, not to continue their education, schools probably have at least until well into twelfth grade to try to influence that decision.

Finally in this section we sought to complement this view of outside influences on the students. Thus, we examined the perception among these respondents about whether they retained some control of their own destiny. We considered this question:

- To what extent do students view themselves as being in control of the decisions?

Students reported a high degree of belief that they carried a major share of the responsibility for their own postsecondary choices. Over 72 percent of the sample (nine-tenths of those who answered the question) acknowledged that they had a great deal of influence (rather than merely some or no influence) on their postsecondary choices. Those who subsequently obtained no postsecondary education were the least likely to express confidence that they had great influence over the choices. It is also interesting to note that the other patterns that showed the same lower level of confidence in their own influence were marked by delay or interruption and no degree (1001 and 1109).*

In addressing this question we also looked at four attitude scales that might bear on it. Two of the scales were not reliable enough to warrant much consideration. The two scales of interest that exhibit acceptable levels of reliability are the

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*Pattern 1033 shows the same percentage expressing belief in a great influence, but that pattern has only a few people in it and the estimate of its true proportion is subject to much greater error than for the other patterns cited in this paragraph.

measures of self-concept and locus of control.* However, the respondents cluster primarily at the lower end of the self-concept scale, reflecting relatively low self-esteem, and the isolated departures from expected frequencies do not appear to form an interpretable pattern. The measure of locus of control has a more symmetrical distribution (table 4.15) and appears useful as a descriptor of pattern selection. Higher scores reflect a belief in greater control over what happens to oneself. Those respondents who are low scorers tend to be overrepresented in pathways that have no postsecondary education or that involve uncompleted vocational postsecondary education. Those who are high scorers tend to be overrepresented in pathways that lead to completion of both two- and four-year programs and also in uncompleted four-year programs and four-year programs that involve interruptions. A high sense of locus of control appears to precede entry into a four-year program. It is not clear, however, that this same phenomenon is prior to the decision to enter such a program.

Our findings are quite consistent with the status attainment view that significant other influence and educational and occupational aspirations are closely associated with postsecondary educational decisions. Students reported that parents, peers, and teachers and counselors had influence on their decisions, with the relative influence of those groups varying from strongest to weakest, respectively, in the order listed. Even with the strong influence of significant others, however, most students believed themselves to have a major role in the decision-making. Our results suggest that having "influence" on decision-making is not a zero-sum game. More influence by one source does not require less by another. Those students who followed the pathways leading to four-year degrees were in the group most likely to have made a decision before they reached twelfth grade or to have found at least tentative occupational and educational goals by the time of their high school graduation. But they were also those most likely to report that parents or teachers had an influence on their decisions. Those students who followed the pathways that are least productive, at least by conventional standards in which credentials and evidence of purposefulness are important, were also those students who as seniors were most uncertain of their educational or occupational goals, who felt they had the least control over their own future, and reported the least influence on their decisions by parents or teachers. What is unclear from these data, however, is whether those who reported less influence of parents or teachers answer that way because their parents and teachers made less effort to influence them or because they (the students) were more likely to disregard

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*See Riccobono et al. 1981, for a description of the questions used to generate the scale.

TABLE 4.15

TRANSITION PATTERNS BY LOCUS OF CONTROL
(PERCENTAGE DISTRIBUTION WITHIN PATTERN)
CLASS OF '72

Scale Score		1.00-2.99	3.00-3.99	4.00-5.00	Missing
No postsecondary	0000	14.7*	34.7*	27.4*	23.2
Traditional pathway, no degree	0001	12.2*	34.4	31.5*	21.6
	0002	11.1	33.0	38.9	17.0
	0003	5.4*	29.1	46.0*	19.4
	0006	8.5	33.8	36.3	21.3
	0009	11.8	33.2	35.9	19.0
Vocational degree	0011	10.1	31.2	45.4	13.3
	0019	7.2	27.8	44.6	20.4
	1011	12.6	38.7	26.5	22.2
Community college degree	0022	0.6*	27.6	51.3*	20.5
	1022	13.6	40.5	26.1	19.8
	0029	4.7*	34.3	44.2	16.7
Four-year degree	0033	3.3*	23.5*	55.1*	18.2
	1033	6.3	26.1	38.2	29.5
	0039	4.0*	29.7	48.1*	18.2
Degree and continuing	0083	1.8*	33.4	48.2	16.6
	0093	2.6*	22.1*	5.7*	19.5
Interruption and no degree	0103	4.8*	23.8	54.9*	16.5
	0105	7.4	28.4	40.2	24.0
	0106	6.2*	30.6	45.2*	18.0
	0107	7.0	24.1*	47.1*	21.9
	0109	6.3	27.5	43.3	21.9
Delay and no degree	1001	13.7*	31.7	33.0*	21.5
	1002	10.5	32.4	36.7	19.5
	1003	6.4	34.9	35.9	22.9
	1009	13.9*	36.9	33.6	15.5
Delay, interruption, and no degree	1106	7.2	37.7	39.8	15.3
	1109	9.2	31.8	32.1	26.9
All respondents (n = 16,450)		9.0	30.9	39.5	20.5

NOTE: Pathway codes are presented in table 4.1.

*Probability $\leq$ .05 that the observed percentage would occur by chance. A chi-square test with 1 degree of freedom was calculated separately for each cell.

whatever help and advice was offered them. It is important to recognize that useful policy recommendations are difficult to make in this area until the reason for those reported differences in influence can be determined.

Academic Achievement

Both status attainment and human capital theories emphasize the role of academic aptitude and achievement in affecting educational attainment. In both views, students with higher aptitude or achievement are more likely to attend and complete four-year colleges or universities. In status attainment higher aptitude is expected to be positively related to parents' educational and occupational attainment, as reflected in the socioeconomic status scale, but it is expected also to have an impact on attainment independent of SES. In the human capital view, higher academic aptitude is necessary to complete more advanced educational programs, and it also may increase the return from any given amount of schooling attained. The issues we considered here are these:

- What are the differences in pathways followed by high academic achievers in high school and by low achievers?
- Are some measures of achievement more discriminating indicators than others of the transition pattern followed?

The association between transition pattern and academic achievement and aptitude corresponds closely to expectations of the theories. Academic aptitude and achievement are reflected here with five measures from the Class of '72 data and one measure from the NLS Youth data. The Class of '72 measures include vocabulary, reading, mathematics, and composite (combination of the others) aptitude test scores from tests taken as seniors in high school (tables 4.16 through 4.19).* It also includes class rank (table 4.20). The measure for the NLS Youth is the score on the Armed Forces Qualification Test (AFQT) (table 4.21).

Those patterns leading to university degrees are also those with the highest average test scores and highest rank in class. The next highest average achievement levels are found in the pathways that lead to two-year degrees. Very close to the two-year degree group, however, is the group of nondegreed pathways that involve attendance at universities. There is apparently

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*Whether these are true aptitude tests or primarily achievement tests is admittedly debatable. But at the level at which they are examined here, that distinction need not concern us.

TABLE 4.16

TRANSITION PATTERNS BY VOCABULARY TEST (STANDARDIZED)
(PERCENTAGE DISTRIBUTION WITHIN PATTERN)
CLASS OF '72

		20–40	40–60	60–80	Missing
No postsecondary	0000	17.8	50.2	6.7	25.4
Traditional pathway, no degree	0001	17.6*	52.3	6.8*	23.4
	0002	14.2	58.3	4.4*	23.1
	0003	7.4*	48.5	21.6*	22.5
	0006	9.3	48.1	17.3	25.4
	0009	15.1*	48.2	13.6*	23.0
Vocational degree	0011	19.1*	51.6	14.0	15.2
	0019	6.3*	49.6	20.4	23.7
	1011	13.7	54.5	8.2	23.6
Community college degree	0022	4.5*	57.2	17.0	21.2
	1022	14.2	52.1	13.9	19.8
	0029	6.8*	49.3	23.0*	20.8
Four-year degree	0033	2.6*	41.6	35.3*	20.5
	1033	3.0*	39.2	28.3*	29.5
	0039	2.5*	42.5	34.0*	21.0
Degree and continuing	0083	1.7*	53.5	26.5*	18.2
	0093	1.6*	35.2*	40.3*	23.0
Interruption and no degree	0103	2.9*	45.1	30.2*	21.8
	0105	5.2*	49.9	17.7	27.2
	0106	6.1*	52.0	20.8	21.1
	0107	8.6	44.6	21.3	25.5
	0109	8.2	46.7	19.2	25.9
Delay and no degree	1001	15.3*	52.1	9.1*	23.6
	1002	11.4	50.8	13.4*	24.4
	1003	9.2	47.0	20.2	23.6
	1009	10.9	58.6*	10.8*	19.6
Delay, interruption, and no degree	1106	8.1	59.1*	13.0	19.9
	1109	9.5	45.1	14.8	30.6
All respondents (n = 16,450)		10.3	47.7	18.5	23.4

NOTE: Pathway codes are presented in table 4.1.

*Probability $\leq$ .05 that the observed percentage would occur by chance. A chi-square test with 1 degree of freedom was calculated separately for each cell.

TABLE 4.17

TRANSITION PATTERNS BY READING TEST (STANDARDIZED)
(PERCENTAGE DISTRIBUTION WITHIN PATTERN)
CLASS OF '72

		20–40	40–60	60–80	Missing
No postsecondary	0000	21.2*	48.3	5.2*	25.4
Traditional pathway, no degree	0001	18.3*	51.0	7.3*	23.4
	0002	13.4	59.1	4.5*	23.1
	0003	5.5*	53.5	18.5*	22.5
	0006	8.8	49.4	16.5	25.4
	0009	15.4*	53.4	8.1*	23.0
Vocational degree	0011	13.9	61.2*	9.7	15.2
	0019	4.4*	54.9	17.0	23.7
	1011	18.0	53.8	4.7*	23.6
Community college degree	0022	4.3*	61.1	13.4	21.2
	1022	5.3	57.3	17.6	19.8
	0029	4.8*	57.8*	16.6	20.8
Four-year degree	0033	2.3*	44.8*	32.4*	20.5
	1033	4.2	46.4	19.9	29.5
	0039	2.7*	47.4	28.9*	21.0
Degree and continuing	0083	1.6*	56.7	23.5	18.2
	0093	2.0*	40.3*	34.7*	23.0
Interruption and no degree	0103	3.2*	52.3	22.7*	21.8
	0105	8.4	51.8	12.5	27.2
	0106	5.5*	54.0	19.4*	21.1
	0107	6.9*	51.4	16.3	25.5
	0109	11.5	47.1	15.5	25.9
Delay and no degree	1001	16.3*	52.1	8.1*	23.6
	1002	12.4	56.5	6.7*	24.4
	1003	7.8	52.5	16.0	23.6
	1009	17.7*	51.6	11.0*	19.6
Delay, interruption, and no degree	1106	12.6	55.1	12.4	19.9
	1109	7.5	50.4	11.5	30.6
All respondents (n = 16,450)		11.1	49.9	15.6	23.4

NOTE: Pathway codes are presented in table 4.1.

*Probability $\leq$ .05 that the observed percentage would occur by chance. A chi-square test with 1 degree of freedom was calculated separately for each cell.

TABLE 4.18

TRANSITION PATTERNS BY MATH TEST (STANDARDIZED)
(PERCENTAGE DISTRIBUTION WITHIN PATTERN)
CLASS OF '72

		20-40	40-60	60-80	Missing
No postsecondary	0000	20.9*	48.4*	5.2*	25.4
Traditional pathway, no degree	0001	15.4*	54.3*	6.9*	23.4
	0002	12.8	53.1	11.1*	23.1
	0003	5.9*	46.8	24.8*	22.5
	0006	7.8	46.2	20.7	25.4
	0009	18.0*	47.8	11.2*	23.0
Vocational degree	0011	9.9	57.5*	17.4	15.2
	0019	7.1*	48.0	21.2	23.7
	1011	8.0	62.8	5.6*	23.6
Community college degree	0022	7.3	47.7	23.8	21.2
	1022	12.4	55.8	12.0	19.8
	0029	2.8*	57.0*	19.4	20.8
Four-year degree	0033	1.5*	33.3*	44.7*	20.5
	1033	2.3*	46.1	22.1	29.5
	0039	1.4*	38.1*	39.5*	21.0
Degree and continuing	0083	2.6*	50.7	28.5*	18.2
	0093	0.9*	32.6*	43.6*	23.0
Interruption and no degree	0103	4.1*	40.8	33.3*	21.8
	0105	10.6	44.9	17.2	27.2
	0106	8.8	46.2	23.8*	21.1
	0107	9.3	44.3	20.9	25.5
	0109	9.1	47.1	17.8	25.9
Delay and no degree	1001	17.3*	52.4*	6.7*	23.6
	1002	14.3	54.4*	6.9*	24.4
	1003	11.5	45.8	19.0	23.6
	1009	18.8	48.7	12.9	19.6
Delay, interruption, and no degree	1106	11.9	54.5	13.7	19.9
	1109	13.4	46.6	9.5*	30.6
All respondents (n = 16,450)		11.3	45.8	19.5	23.4

NOTE: Pathway codes are presented in table 4.1.

*Probability $\leq$ .05 that the obse ved percentage would occur by chance. A chi-square test with 1 degree of freedom was calculated separately for each cell.

TABLE 4.19

TRANSITION PATTERN BY APTITUDE TEST COMPOSITE
(PERCENTAGE DISTRIBUTION WITHIN PATTERNS)
CLASS OF '72

		Low	Medium	High	Unclassified
No postsecondary	0000	34.2	33.8	6.6	25.4
Traditional pathway, no degree	0001	29.8*	37.9	8.8*	23.4
	0002	27.0*	42.8	7.2*	23.1
	0003	10.7*	38.8	28.0*	22.5
	0006	12.9*	39.2	22.6	25.4
	0009	26.9*	40.1	10.0*	23.0
Vocational degree	0011	21.2	50.2*	13.4*	15.2
	0019	9.2*	44.6*	22.6	23.7
	1011	24.4	49.2	2.8*	23.6
Community college degree	0022	9.8*	45.2	23.7	21.2
	1022	25.7	42.4	12.0	19.8
	0029	8.4*	45.6*	25.2	20.8
Four-year degree	0033	3.5*	27.9*	48.0*	20.5
	1033	4.9*	46.2*	19.4	29.5
	0039	4.3*	33.1	41.6*	21.0
Degree and continuing	0083	4.4*	42.4	35.0*	18.2
	0093	3.2*	22.8*	51.0*	23.0
Interruption and no degree	0103	5.0*	33.3	40.0*	21.8
	0105	15.5	37.8	19.4	27.2
	0106	14.0*	38.9	26.0	21.1
	0107	14.6	35.3	24.6	25.5
	0109	17.8	35.1	21.1	25.9
Delay and no degree	1001	29.5*	36.2	10.8*	23.6
	1002	24.0*	42.0*	9.5*	24.4
	1003	15.0	39.4	22.0	23.6
	1009	28.2*	39.5	12.6*	19.6
Delay, interruption, and no degree	1106	22.0	42.4	15.7*	19.9
	1109	21.9	31.6	16.0	30.6
All respondents (n = 22,652)		19.2	35.4	22.0	23.4

NOTE: Pathway codes are presented in table 4.1.

*Probability $\leq$ .05 that the observed percentage would occur by chance. A chi-square test with 1 degree of freedom was calculated separately for each cell.

TABLE 4.20

TRANSITION PATTERN BY CLASS RANK (QUINTILE)
(PERCENTAGE DISTRIBUTION WITHIN PATTERN AND GENDER)
CLASS OF '72

		Lowest	2nd	3rd	4th	Highest	Missing
No postsecondary	0000	19.5*	19.4*	17.8	11.5*	5.9*	25.9
Traditional pathway, no degree	0001	11.6	20.4*	19.7	15.3	8.0*	25.0
	0002	15.1	22.3*	23.1	15.8	4.4*	19.1
	0003	6.2*	13.3	19.7	18.4	19.0	23.4
	0006	7.4*	15.3	19.3	17.8	13.4	26.9
	0009	17.2*	19.2*	21.9*	10.4*	8.3*	23.0
Vocational degree	0011	13.4	19.7	21.6	22.8*	12.5	10.0
	0019	4.0*	10.4*	19.1	21.1*	19.7	25.8
	1011	20.7*	28.4	14.5	11.0	3.7*	21.7
Community college degree	0022	9.0	10.4	19.3	18.9	18.1	24.4
	1022	18.5	16.4	19.2	8.4	8.7	28.8
	0029	7.4*	14.6	19.6	17.7	22.2*	18.5
Four-year degree	0033	1.5*	5.3*	13.4*	21.0*	38.1*	20.7
	1033	5.0	11.0	20.2	19.0	14.5	30.4
	0039	3.6*	6.5*	15.1	20.5*	34.1*	20.2
Degree and continuing	0083	5.4*	7.8*	10.5	28.6*	24.0*	23.7
	0093	1.3*	6.7*	9.2*	19.8*	40.4*	22.6
Interruption and no degree	0103	4.5*	7.6*	16.2	23.7*	27.2*	20.9
	0105	10.2	16.0	21.2	14.3	9.0*	29.4
	0106	8.8*	17.0	19.2	18.5	16.4	20.1
	0107	11.1	15.3	17.4	15.5	16.0	24.7
	0109	8.5	14.7	20.6	16.9	13.0	26.4
Delay and no degree	1001	19.3*	19.8*	17.6	10.9*	6.9*	25.5
	1002	16.5*	18.5	18.6	13.1	11.0*	22.4
	1003	14.4	15.2	16.8	20.3	7.6*	25.7
	1009	18.0*	21.2*	18.2	14.7	8.0*	19.8
Delay, interruption, and no degree	1106	14.8	23.9*	17.2	13.3	10.9	19.9
	1109	13.5	23.2*	12.2	14.8	7.9*	28.3
All respondents (n = 16,450)		11.5	15.2	17.1	16.0	16.6	23.5

NOTE: Pathway codes are presented in table 4.1.

*Probability $\leq$ .05 that the observed percentage would occur by chance. A chi-square test with 1 degree of freedom was calculated separately for each cell.

TABLE 4.21

WEIGHTED MEAN AFQT SCORES BY TRANSITION PATTERN
NLS YOUTH

		AFQT	t-value
No postsecondary	0000	67.96*	40.13
Traditional pathway, no degree	0001	70.06*	11.64
	0002	75.26*	15.05
	0003	84.37*	5.61
	0006	78.34*	26.48
	0009	82.59*	3.16
Vocational degree	0011	76.31*	8.92
	0011	74.79*	6.42
	7011	73.93*	10.45
Community college degree	0022	79.84*	10.06
	1022	78.04*	6.07
Four-year degree	0033	88.74	--
	1033	82.61*	3.97
	0035	90.99*	2.98
Interruption and no degree	0106	81.09*	4.34
Delay and no degree	1001	72.87*	11.17
	1002	75.50*	8.63
	1003	82.62*	3.71
All respondents (n = 7,060)		77.50	

NOTE: Pathway codes are presented in table 4.1.

*Signifies that the mean score for a pathway differs significantly at .05 level from the mean for pathway 0033. The t-values shown are for that test, for weighted data, on the assumption of unequal variances of AFQT scores among pathways.

little difference in academic achievement between the credentialed group of those who attend only community colleges and those who attend four-year institutions but receive no credential. The next highest average achievement level is for those pathways that lead to vocational degrees only. Among those pathways not already noted that do not lead to a degree, delay is associated with lower achievement than is immediate starting of a postsecondary experience. As one would expect, the lowest average academic achievement is found among those who never attend postsecondary institutions.

All of the tests discriminate between four-year degree patterns and other patterns, especially those for no postsecondary and no degree. This holds also for the AFQT test in the NLS Youth. Since only one test is available for NLS Youth, it is impossible to compare tests within that data set. But in the Class of '72 data, the largest percentage differences between four-year degree and other patterns occur on the mathematics tests. Mathematics tests appear in this case to be a slightly better indicator of college success than are reading and vocabulary tests, though all these test scores are highly correlated.

The simple relationship discussed here between aptitude or achievement and transition pattern followed agrees with the conventional wisdom. Although the results are generally supportive of the view that merit (ability) matters in educational attainment in this country, the uncontrolled data shown here do not show that only merit matters. This relationship needs much more intensive scrutiny than we could apply in these initial analyses. We need to examine, for example, whether aptitude or achievement continue to be related to choice of pathway when such factors as SES, race, gender, aspirations, and family income are controlled for. We plan to make more detailed analyses such as these in forthcoming work. The initial results here suggest that those analyses will probably not prove inconsistent with the broad thrust of previous research on these issues.

High School Curriculum

High school curriculum is both a choice variable for high school students and a part of the high school experience that one would expect to have some independent effect on subsequent behavior, including choice of transition pattern. Separating the independent effects of curriculum on subsequent choices from the effects of other variables (such as SES or academic ability) that influence both the curriculum choice and subsequent choices is a complex task that we are not attempting here. We are concerned at this point only with noting whether the tendencies that we would generally expect to find are borne out in these data. We would anticipate, for example, that students who chose an academic curriculum in high school would be much more likely than

other students to attend four-year colleges and universities. Similarly, we would anticipate that high school vocational students would be more likely than academic students to attend postsecondary vocational schools or to move directly into the labor force with no formal postsecondary education. It is on this level that we considered the following questions:

- Do high school vocational students follow pathways through postsecondary vocational schools more frequently than do other students?
- Are the students who attend four-year institutions predominantly from a high school academic curriculum or do substantial portions of vocational and general curriculum students also attend four-year institutions?
- Are students who attend four-year institutions but do not acquire degrees more likely to have been vocational or general students than to have been academic students while in high school?
- Are the associations between high school curriculum and postsecondary transition patterns dependent on gender?
- Has the relationship between curriculum and transition patterns appeared to change over the past decade?

There is a strong relationship between high school curriculum* and transition pattern, with the relationship differing

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*The specification of curriculum categories for NLS Youth was described previously in chapter 2. For Class of '72 only the number of courses was available. Curriculum categories for the Class of '72 data were set to correspond as closely as possible with the number of vocational or academic courses used to define categories for the NLS Youth. The course unit was semesters, rather than Carnegie credits. The equivalences assumed were two semester courses equals one Carnegie credit, although it is clear that such equivalences are only approximate and will not be strictly appropriate for courses that meet for more or less than five hours per week. Course information on number of class meetings per week was available for some students in the Class of '72. But the number of cases without such complete information was large enough (about 2,000) that we preferred the approximate equivalence to the discarding of so many observations. Please not that we are not using either the administrator classification or the self-report of curriculum for either data set.

between men and women (tables 4.22 and 4.23). Moreover, the distribution of men and women differs among curriculum groups. For example, although about the same percentages of men and women fall in the general curriculum category, about 40 percent of women take a vocational curriculum, compared to about 27 percent of men, and only 15 percent of women follow an academic curriculum, compared to about 24 percent of men. For these reasons the relationship between curriculum and transition pattern will be discussed separately for men and for women.

High school curriculum is strongly related to academic aptitude. Hence, it is not surprising that among men the distribution of curriculum followers within pathways corresponds roughly to the distribution for measures of academic achievement among pathways. In the Class of '72 data men who followed a vocational curriculum in high school comprised about 40 percent of the men who took the no-postsecondary pathway and roughly 25 to 40 percent of the men who took the noninterrupted pathways that did not produce a degree.

Vocational men also comprised between 30 and 40 percent of the men who went to postsecondary vocational schools, whether postsecondary vocational degrees were acquired or not. But the high school vocational curriculum contributes far fewer students to the two-year or four-year degree patterns than does either the general or academic curriculum. The ratio of general to vocational students in the university degree pathways is 2:1 or 3:1; in two-year programs it is 1.5:1 or 2:1. The ratio for academic students is, of course, even higher. These relationships conform to expectations based on the academic achievement levels of the various high school curriculum groups.

Among men, those from the academic curriculum dominate the four-year degree pathways, as one would expect. But two other relationships are apparent that one might not expect. First, both the academic and general curricula contribute similar fractions among the men who follow either the vocational or two-year degree groups of pathways. Second, academic and general men dominate in equal proportions the interrupted pathways that do not lead to a degree.

Thus for men, vocational curriculum students dominate the postsecondary vocational degree pathways, and outside the four-year degree pathways, general students resemble academic students more nearly than they do vocational students. Moreover, among men who do not earn postsecondary degrees, academic and general students tend to follow different sets of patterns than do vocational students. The academic and general students are more likely than vocational students to have started their postsecondary education without delay but to have experienced interruptions. Vocational students are more likely to have followed the noninterrupted pathways either with or without delays.

TABLE 4.22

TRANSITION PATTERN BY CURRICULUM BY GENDER
(PERCENTAGE DISTRIBUTION WITHIN PATTERN AND GENDER)
CLASS OF '72

		Male				Female			
		Academic	Botht	General	Vocational	Academic	Botht	General	Vocational
No postsecondary	0000	10.3*	6.2*	17.0*	41.5*	5.6	3.2	16.1	54.1
Traditional pathway, no degree	0001	18.4	6.3	14.4*	38.2*	7.7*	3.4	15.4*	53.7*
	0002	14.9	3.7	23.1	45.4*	7.4	--	22.3	41.0
	0003	29.8*	3.8	28.9	22.4*	24.9*	3.7	25.7	33.1*
	0006	21.9	3.8	30.4	21.9	15.1	1.6	27.4	42.2
	0009	17.7*	4.8	24.1	31.0	13.8	2.2	21.9	41.6
Vocational degree	0011	16.7	4.8	18.7	40.0*	11.6	9.4*	21.5	44.6
	0019	21.5	12.1*	17.8	32.4	19.5	5.3*	29.0	33.5
	1011	23.2	1.9	22.6	31.5	4.5	--	40.2	33.4
Community college degree	0022	34.0	1.0	34.8	15.2	22.9	3.8	30.5	34.2
	1022	26.6	4.2	25.5	26.2	2.4	13.6*	27.1	29.0
	0029	31.3	2.9	29.6	21.8	19.4	1.8	29.3	35.2
Four-year degree	0033	43.9*	1.5*	32.2*	10.3*	30.1*	2.8	40.6*	17.7*
	1033	31.7	6.1	15.8	13.9	22.7	--	43.6	15.1
	0039	40.8*	2.7	32.6*	11.4*	27.2*	2.7	39.5*	18.8*
Degree and continuing	0083	38.6*	3.3	29.6	16.3	26.4*	1.3	37.9*	19.0*
	0093	43.9*	2.1*	34.0*	7.1*	29.0*	2.1	44.6*	12.0*
Interruption and no degree	0103	38.5*	3.5	27.8	16.3*	20.0	1.4	41.1*	27.9
	0105	28.9	1.8	26.3	22.5	6.2*	1.5	20.2	47.5
	0106	30.4*	2.2	31.9*	22.6	15.7	1.3	35.3*	27.9*
	0107	31.0	4.1	29.3	23.4	15.1	2.8	26.4	33.8
	0109	20.7	3.1	28.4	24.2	14.2	3.6	30.6	34.7
Delay and no degree	1001	14.4*	3.8	18.3*	40.1*	7.6*	1.9	17.8*	53.6*
	1002	13.0*	4.2	23.5	39.8*	9.0*	1.4	15.4*	54.0*
	1003	20.0	1.3	30.5	32.5	9.5	4.6	20.9	47.0
	1009	16.3	2.9	17.6	37.9*	8.1*	3.8	22.3	53.1*
Delay, interruption, and no degree	1106	23.0	0.6	26.0	28.9	13.0	2.3	13.8	45.9
	1109	15.2*	5.8	25.0	30.4	5.8*	--	29.8	37.9
All respondents (n = 16,450)		24.4	4.0	24.8	27.4	14.7	2.8	25.8	39.4

NOTE: Pathway codes are presented in table 4.1.

†Respondent met both academic and vocational criteria.

*Probability $\leq$ .05 that the observed percentage would occur by chance. A chi-square test with 1 degree of freedom was calculated separately for each cell.

TABLE 4.23

TRANSITION PATTERNS BY HIGH SCHOOL CURRICULUM
(PERCENTAGE DISTRIBUTION WITHIN PATTERN)
NLS YOUTH

		Vocational	General	Academic	Missing Data
No postsecondary	0000	26.6*	35.2*	3.0*	35.2*
Traditional pathway, no degree	0001	23.1	36.8	5.3	34.8
	0002	21.1	39.3	9.1	30.6
	0003	11.5*	44.8*	18.7*	25.0
	0006	11.8	50.5	6.5	31.2
	0009	11.7	40.2	23.0*	25.1
Vocational degree	0011	40.0*	34.0	9.6	16.3*
	7011	40.8*	23.4*	0.5*	35.2
Community college degree	0022	25.6	42.5	11.8	20.1*
	1022	15.6	45.4	6.6	32.5
Four-year degree	0033	13.7*	37.9	28.7*	19.7*
	1033	15.2	38.7	13.5	32.5
	0035	15.3	43.2	26.4*	15.1*
	0039	23.0	16.7*	33.7*	26.5
Interruption and no degree	0106	13.3	46.7	12.9	27.2
Delay and no degree	1001	25.8	33.6	9.3	31.3
	1002	17.0	39.9	7.8	35.2
	1003	27.7	34.2	9.3	28.8
All respondents (n = 7,060)		21.0	37.7	12.4	29.0

NOTE: Pathway codes are presented in table 4.1.

*Probability $\leq$ .05 that the observed percentage would occur by chance. A chi-square test with 1 degree of freedom was calculated separately for each cell.

The higher proportion of women than of men in vocational curricula alters the relationship between high school curriculum and patterns. But if the descriptions are recast in terms of comparisons of proportions in a pattern with proportions in the sample as a whole, the relative distribution of women by curriculum is remarkably similar to the distribution for men. Where men from one curriculum are a larger (or smaller) percentage of a pattern than of the sample as a whole, the same relationship usually holds true for women. With a few exceptions, this describes the groups of patterns for no-postsecondary education, for vocational degrees, for community college and four-year degrees, and for delay with no degree. The similarity is remarkable. This suggests that by the time high school curriculum choices are made, most students have already made their decisions to follow or to deviate from traditional gender-based stereotypes regarding their education. Knowledge of gender contributes little to any projection of choices of postsecondary pathways once the distribution of students by high school curriculum is known.* We should reiterate that high school curriculum choices vary systematically by gender and may already incorporate gender-related differences in likely choices of postsecondary transition patterns.

The NLS Youth data reveal a slightly different picture. Those data show the general curriculum group dominating the vocational group among the no-postsecondary and no-degree transition patterns as well as among the degreed patterns at two-year or four-year institutions. Only among postsecondary vocational school patterns do the high school vocational students dominate. But the general curriculum category also comprises a much larger proportion of the full sample in the NLS Youth than it does in Class of '72. Even relative to the distribution within the full sample, however, the relationships just noted still tend to hold. Interestingly, high school vocational students account for about the same proportion of participants in degreed postsecondary vocational patterns in the NLS Youth data as in the Class of '72 sample. This finding suggests that in the late 1970s, postsecondary vocational students are more likely than they were in the early part of the decade to have taken a vocational curriculum in high school.

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*This may be telling us simply that our identification of postsecondary vocational schools does not contain a gender bias. In this sense, the similarity of relative distribution for men and women may be telling us more about the survey instruments than about the behavior of the real world, but it is nonetheless useful in allowing an economical description of the relationship between high school curriculum and postsecondary pattern that fits both men and women.

These correlations between choice of high school curriculum and choice of postsecondary transition pattern are important in two respects. First, in judging the appropriateness of our specification of transition patterns, we note that the relationships between high school curriculum and choice of transition pathway generally correspond to our prior expectations. Vocational students in high school were generally more likely than other students to select transition patterns either leading through postsecondary vocational schools or involving no formal postsecondary education at all. Academic curriculum students were more likely than others to get four-year university or college degrees. Second, in planning the subsequent research on the effects of transition patterns, the finding that gender-related differences in choice of transition pattern are rather well-embodied in choice of high school curriculum suggests that high school curriculum can function as a useful summary concept that economically captures many of the effects of other variables, such as gender and possibly such variables as aptitude and socioeconomic background. This finding holds considerable promise for simplifying the subsequent analysis of transition patterns.

School Location or Size

We examined the high school's location and size as possible indicators of broad differences in educational policy or other variables:

- Do differences in a community's location or size, or in the size of the high school influence the patterns subsequently followed by its high school graduates?

Because there has been a variety of approaches to the provision of opportunities for postsecondary education across the nation, the proportions of people who follow the more successful patterns might show differences from region to region. Differences of these kinds are evident from examination of tables 4.24 and 4.25. In both the Class of '72 data and the NLS Youth, the West shows the greatest variation in pattern. People who live in the Northeast are less likely than the total group of respondents to follow without delay or interruption a pathway that does not lead to a degree, while those in the West are more likely to follow such paths, significantly those that include a regression sequence. People in the West are much less likely to obtain a vocational degree after a direct start in a vocational school after completing high school. Those living in the North Central region are most likely to do so.

When people live in the Northeast and West, they are more likely to follow a pattern leading to a degree from a community college that has an indeterminate sequence rather than the more traditional immediate start no-delay pathway. The opposite tends

TABLE 4.24

TRANSITION PATTERNS BY REGION
(PERCENTAGE DISTRIBUTION WITHIN PATTERN)
CLASS OF '72

		Northeast	North Central	South	West
No postsecondary	0000	25.6	29.9	31.1*	13.4*
Traditional pathway, no degree	0001	25.8	30.6	29.0	14.7
	0002	17.9	22.4	26.4	33.3
	0003	25.5	30.5	29.1	14.9
	0006	17.7*	29.6	27.8	24.9*
	0009	18.7*	27.0	33.9*	20.4
Vocational degree	0011	24.0	38.2*	31.0	6.7*
	0019	24.0	33.8	25.3	16.8
	1011	36.1	34.4	26.0	3.4
Community college degree	0022	30.8	21.3	30.4	17.5
	1022	38.5	23.5	19.5	18.5
	0029	33.1*	21.3*	19.4*	26.3*
Four-year degree	0033	33.6*	29.2	25.7*	11.5*
	1033	34.1	40.1	20.0	5.7
	0039	26.1	23.1	27.7	23.0*
Degree and continuing	0083	25.2	26.1	28.4	20.4
	0093	28.8*	29.2	29.0	13.1*
Interruption and no degree	0103	24.0	28.8	28.2	19.0
	0105	24.8	31.0	29.4	14.7
	0106	19.5*	28.6	30.2	21.7*
	0107	20.9	23.9	34.1	21.1*
	0109	23.3	25.3	26.3	25.1*
Delay and no degree	1001	27.4	30.4	32.8*	9.4*
	1002	15.9*	33.4	28.3	22.5*
	1003	25.4	33.5	27.8	13.3
	1009	19.4*	34.0	29.1	17.5
Delay, interruption, and no degree	1106	18.8	26.0	25.7	29.4
	1109	21.1	31.3	26.8	20.8
All respondents (n = 16,450)		25.4	29.2	28.8	16.6

NOTE: Pathway codes are presented in table 4.1.

*Probability $\leq$ .05 that the observed percentage would occur by chance. A chi-square test with 1 degree of freedom was calculated separately for each cell.

TABLE 4.25

TRANSITION PATTERNS BY REGION
(PERCENTAGE DISTRIBUTION WITHIN PATTERN)
NLS YOUTH

		Northeast	North Central	South	West
No postsecondary	0000	20.3	32.0	31.5	16.2
Traditional pathway, no degree	0001	24.0	30.4	33.5	12.1
	0002	15.8*	21.1*	34.7	28.4*
	0003	14.9*	26.5	41.3*	17.2
	0006	23.4	28.5	19.8	28.3*
	0009	26.9	24.5	37.3	11.3
Vocational degree	0011	29.4	45.1*	17.5*	8.0*
	7011	16.4	42.3*	37.1	4.3*
Community college degree	0022	23.1	22.4*	33.8	20.7
	1022	21.1	35.4	28.2	15.3
Four-year degree	0033	26.7*	30.6	32.4	10.4*
	1033	31.1	27.8	25.5	15.6
	0035	21.2	35.8	30.8	12.1
	0039	21.3	25.1	36.4	17.2
Interruption and no degree	0106	20.7	27.0	22.5	29.7*
Delay and no degree	1001	25.7	35.6	27.1	11.6
	1002	13.5	24.1	28.6	33.8*
	1003	23.0	35.7	23.5	17.8
All respondents (n = 7,060)		21.4	30.1	31.8	16.8

NOTE: Pathway codes are presented in table 4.1.

*Probability $\leq$ .05 that the observed percentage would occur by chance. A chi-square test with 1 degree of freedom was calculated separately for each cell.

to be true for the North Central and South. Pathways leading directly and without delay to four-year degrees are followed more frequently than expected in the Northeast and less frequently in the West. In the West there is a tendency toward more frequent changes of institution type, as shown by the frequency of regression and mixed pathways. The relative popularity in the West of pathways through community colleges is in part a product of California's extensive system of low tuition community colleges. The direction of those trends is the same but not as pronounced in the NLS Youth data. It is therefore apparent that there are clear and significant differences in patterns followed across the regions of the country.

The second locational characteristic that shows systematic variation with postsecondary path is the size of community (table 4.26). People who attended high school in the smallest communities are more likely to undertake no postsecondary education than those in any larger community. Also, larger proportions of the respondents from small communities are found among those who follow vocational paths when compared to their share of the population. The opposite is true for large and very large communities. These respondents are proportionally less likely to follow vocational pathways.

When considering four-year college attendance, the very large communities are the homes of an unexpectedly large component of those following such paths, although not always in a traditional manner. Significantly more of these respondents than expected follow mixed pathways, including regressions and indeterminate sequences. But the small-community respondents are represented less frequently than expected among those following four-year college pathways. There are no similar trends for community college attendance. Some factor related to community size therefore appears to influence the pathway chosen.

The third characteristic, somewhat related to community size, is the size of the high school attended (table 4.27). In 1972 nearly two-thirds of the respondents attended high schools with less than 400 seniors. These students are proportionately more likely to follow vocational pathways, often not resulting in degrees, and proportionately less likely to follow pathways leading successfully to four-year degrees. There appears to be an association between attending a smaller high school and experiencing fewer interruptions in postsecondary work that does not occur to the same degree when community size alone is considered. Moreover, respondents from both large communities and large high schools have more interruptions than would be expected by chance. Thus both community size and school size appear to be important in describing who follows each path.

Because the largest proportion of high SES individuals tend to reside in more urbanized areas, we were concerned that some of

TABLE 4.26

TRANSITION PATTERN BY SIZE OF COMMUNITY OF HIGH SCHOOL ATTENDED
(PERCENTAGE DISTRIBUTION WITHIN PATTERN)
NLS '72

		Small	Medium	Large	Very Large	Missing
No postsecondary	0000	51.8*	10.9*	16.3*	11.0*	10.1
Traditional pathway, no degree	0001	52.5*	10.3	15.3*	10.7*	11.2
	0002	38.7*	13.4	13.1	21.9	12.8
	0003	41.8	15.0*	20.9	15.4	6.9
	0006	43.4	12.7	17.8	18.8	7.3
	0009	40.9	7.8*	19.4	25.4	6.5
Vocational degree	0011	62.4*	11.5	17.9	5.8*	2.4
	0019	52.6*	12.4	15.6	11.2*	8.1
	1011	43.1	13.4	31.8	7.2	4.5
Community college degree	0022	47.4	10.4	22.5	11.7	8.0
	1022	47.8	8.3	18.3	14.6	11.0
	0029	44.3	13.8	17.9	18.6	5.5
Four-year degree	0033	40.5*	13.5	20.1	20.9*	5.1
	1033	39.1	12.9	18.4	8.8	20.8
	0039	38.3*	12.8	20.2	22.2*	6.5
Degree and continuing	0083	42.4	13.1	18.4	21.0	5.1
	0093	36.3*	15.8	20.6	20.6*	6.7
Interruption and no degree	0103	38.6	12.3	27.3*	15.0	6.8
	0105	41.2	8.8	18.0	15.8	16.2
	0106	38.4	13.1	19.6	22.2*	6.6
	0107	31.2	13.8	23.8*	23.5*	7.6
	0109	35.1	13.9	21.4	21.2*	8.4
Delay and no degree	1001	42.5	10.9	19.2	16.3	11.0
	1002	40.6	12.3	17.5	22.5*	7.1
	1003	39.7	14.5	22.9	15.6	7.3
	1009	40.6	12.8	23.0	20.1	3.5
Delay, interruption, and no degree	1106	40.9	14.4	22.9	16.3	5.4
	1109	32.3	14.7	22.2	21.2	9.7
All respondents (n = 16,450)		43.6	12.6	19.0	16.6	8.2

NOTE: Pathway codes are presented in table 4.1.

*Probability $\leq$ .05 that the observed percentage would occur by chance. A chi-square test with 1 degree of freedom was calculated separately for each cell.

TABLE 4.27

TRANSITION PATTERN BY SENIOR CLASS ENROLLMENT
(PERCENTAGE DISTRIBUTION WITHIN PATTERNS)
CLASS OF '72

		<400	>400
No postsecondary	0000	65.6*	34.4*
Traditional pathway, no degree	0001	72.9*	27.1*
	0002	50.6	49.4
	0003	62.0	38.0
	0006	59.9	40.1
	0009	56.9	43.1*
Vocational degree	0011	80.6*	19.4*
	0019	74.6*	25.4*
	1011	59.9	40.1
Community college degree	0022	69.2	30.8
	1022	62.8	38.2
	0029	53.1*	46.9*
Four-year degree	0033	58.5*	41.5*
	1033	77.3	22.7
	0039	55.6*	44.4*
Degree and continuing	0083	49.1*	50.9*
	0093	58.6	41.4
Interruption and no degree	0103	66.0	34.0
	0105	59.9	40.1
	0106	53.9*	46.1*
	0107	53.1*	46.9*
	0109	53.8*	46.2*
Delay and no degree	1001	63.4	36.3
	1002	54.8*	45.2*
	1003	62.6	37.4
	1009	57.3	42.7
Delay, interruption, and no degree	1106	57.3	42.7
	1109	63.0	37.0
All respondents (n = 16,450)		62.7	37.3

NOTE: Pathway codes are presented in table 4.1.

*Probability < .05 that the observed percentage would occur by chance. A chi-square test with 1 degree of freedom was calculated separately for each cell.

the associations between community size or school size and choice of pathway might actually be reflecting differences in average SES levels by community size. We were also concerned that, if there was any impact of community size or high school size independent of SES, that the correlation between community size and high school size might produce a spurious similarity in their apparent effects on choice of pathway. We considered these two possibilities in turn. The relevant findings are presented in the text without accompanying tables.

The data for the Class of '72 show that, among individuals in the high family SES quartile, neither community size nor high school size is related to choice of postsecondary pathway. For this group, family background was far more influential than the size of either community or school. Among individuals in the low family SES quartile, the relationships noted previously between community size and pathway choice again manifested themselves. Those respondents in the small communities were more likely to be in vocational pathways or in the no postsecondary pathway and less likely to be in those pathways leading to four-year degrees. Class size shows no relationship to pathway within this SES quartile.

It is for the two middle SES quartiles of respondents that both the community size and class size relationships emerge strongly. The question here is whether the relationships of pathways either to community size or to class size continue to hold when the other is held constant. The answers seem to be different for vocational school pathways and no-postsecondary pathways than for four-year college degree pathways. For vocational schools and no-postsecondary pathways, the pathway/community size relationship seems to be substantially but not completely independent of the pathway/class size relationship. In both large communities and small communities smaller class size is associated with a greater likelihood of following vocational school pathways (degreed or nondegreed) or no postsecondary pathway. But the relationship is stronger in small communities than in large communities. For four-year degree pathways, the interaction between class size and community size is stronger than for vocational or no postsecondary pathways. In small communities, larger class sizes are associated with a greater likelihood of following pathways to four-year college degrees. But in larger communities, the fraction of students pursuing four-year degree pathways does not differ significantly between large schools and small schools.

We can summarize the relationships between pathway, community size, and school size with three general propositions. First, an upper quartile SES family background tends to dominate any influence of community size or school size on choice of pathway. The next two propositions apply principally to students with middle and lower SES backgrounds. Of those two, students

from small communities and small schools are more likely to attend vocational schools or to acquire no postsecondary education at all. Those same students are also much less likely than others to obtain four-year college degrees.

The policy implications of these tendencies depend on whether the convenient availability of institutions or the availability of aid exert constraints on pathway choice or whether family SES and the culture of small schools and small communities induces appropriate choices not to attend four-year institutions despite their availability. Addressing that question requires more complex behavioral modeling than we could complete in thise phase of the study. But the issue remains high on the agenda for the next phase, and in chapter 6 we offer some conditional policy suggestions.

Summary

Our overall impression from these tabulations is that the specification of transition patterns that we described in chapter 3 is consistent with the broad thrust of the major theories about choices of postsecondary education or training. We have not examined the data in sufficient depth at this point to test the areas in which the theories generate different predictions of observable outcomes. But in our discussion of these tabulations we have pointed out several areas in which the data suggest directions for the research we plan in the coming year. Those areas are summarized and the questions they raise for future research are discussed in more detail in chapter 6.

CHAPTER 5

A PRELIMINARY LOOK AT SELECTED OUTCOMES

The primary objective of the work described here was to identify the transition patterns in preparation for a more detailed examination in the next phase of the study. It is possible here only to look closely enough to suggest whether our specification of transition patterns may be useful in examining the relationship of postsecondary education to outcomes. Three outcome issues are considered here: the relationship of transition pattern to occupation, to postsecondary training, and the relative efficacy of starting at two-year or at four-year schools in the route to a four-year degree.

Occupation

The relationship between transition pattern and occupation could be examined using either the first full-time position the respondent held after leaving school (the entry-portal position) or the position held at some specified point in the life cycle. Identification of either of these occupations is rather complex for the NLS Youth because each person may finish formal schooling at any time (and many had not finished as of the most recent interview date that could be used for this study), and at any interview date there is a wide cross-section of points in the life cycle because the original cohort ranged in age from fourteen to twenty-two in 1978. The Class of '72 data are easier to work with in this respect because all respondents start the survey at the same point in their life cycle and the age range is much narrower. Identifying the first full-time position held after completion of formal schooling is complex in these data, but identifying the position held at the same (chronological) point in the life cycle* is straightforward. We selected the job reported to be held in October 1979 (or the job reported in the 1979 interview to be that most recently held).

With the current interest in the role of education in promoting economic recovery and improving the nation's ability to compete in a world of increasing technological sophistication, we asked the following questions:

- To what extent do the linkages between pathways and occupations correspond to the prior expectations of researchers?

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*As contrasted with positions held at the same stage of the life cycle, which is considerably more difficult to specify and presumes a consensus model of life cycle stages.

- Which pathways lead most often to those occupational areas that are expected to be the leaders in promoting economic growth and recovery over the next decade (computer sciences, engineering, health, electrical crafts, skilled equipment crafts, machine trades)?

- Are some pathways more likely than others to lead to low status jobs (cleaning service, food service, personal service, private household service, farm laborer, laborer)?

Table 5.1 and 5.2 provide some insight to these questions. Table 5.1 shows occupational areas that were selected by the authors as a more revealing aggregation of three-digit census occupation codes than is the standard grouping.* Entries in the table show whether a particular combination of transition pattern and occupation occurs more frequently (+), less frequently (-), or just as frequently (0) as would be expected if transition pattern and occupation were completely unrelated, given the sample-wide distributions by occupation and by transition pattern. Statistical tests were simple one-degree of freedom chi-square tests for each cell. In effect, the tests partition the table into a series of two-by-two tables in which the vertical classes are "transition pattern of interest" and "all other transition patterns," and the horizontal classes are "occupation of interest" and "all other occupations." The test result is shown only for those cells for which the frequency expected by chance was at least 10.** Blank cells are those for which the expected frequency was less than 10. Cells with symbols represent tests that show either significant (+ or -) or insignificant (0) differences at the .05 level for one degree of freedom.

The criteria for table 5.1 were rather stringent, and many cells cannot be evaluated because of small expected cell sizes. Thus, we also present a table that is less rigorous in its

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*The standard occupational groups are too broad to be very informative. The groupings shown represent a compromise that expands the professional, craft, operative, clerical, and service categories into classifications that correspond more nearly to fields that require similar skills or perform similar tasks. Too fine a gradation of occupations would so reduce the number of respondents in each cell as to make statistical evaluation of the results impossible. Even with the classes as broad as they are, many of the cells are too small for statistical tests. See appendix table A-2 for the census occupations within each occupational group.

**This is a conservative use of the rule of thumb cited in Kmenta (1971) and elsewhere.

TABLE 5.1

TRANSITION PATTERNS BY MOST RECENT JOB
(DIRECTION OF DIFFERENCES)
CLASS OF '72

		Professional/Technical							Craft/Skilled									White Collar						Operatives					Service						Farm		Laborer
		Computer	Eng. Tec.	Engineer	Health Pro.	Health Tec.	Misc. Tec.	Professional	Apparel	Construction	Apprentice	Electrical	H. Equipment	Inspector	Mach TOM	Mach. Rep.	Other	Sk. Equip.	Manager	Sales	Clerical	Secretary	Office Mach.	Homemaker	Construction	Mach.	Other	Painter	Trans.	Clean	Food	Health	Pers.	Pr. Hh.	Prof.	Farm	Farm Lab	Laborer
No postsecondary	0000	-	-	-	-	-	0	-	+	+	+	0	+	+	+	+	+	+	-	-	0	+	0	+	+	+	0	+	+	+	0	-	-	-	0	+	+
Traditional pathway, no degree	0001		-	-	-	0		-		+				0		+			-	0	0	+	+	+		0	0		0		+	+	+	-	0			0
	0002							-											0		0	0																
	0003	0	0	-	-	-				0		0		0		0		0	+	0	+	0	0	0		+	-		0	0	0	0	-	-	0			0
	0006				0			-								0			+		0	0		0		-	0		0	0	0		0					0
	0009				0			-		0				0		0			0		0	0		0		0	0		0	0	0		0					0
Vocational degree	0011							-											0		0	0		-													
	0019				+			-								0			0		0	0				-	-		0		-	+		0				-
	1011																		0		0																	
Community college degree	0022							-											0		0	0																
	0029				+			-						0		0			0		-	+		0		-	-		0		0	0		-					0
Four-year degree	0033	+	0	+	+	+		+		-		-	-	-	-	-	0	-	+	0	-	-	-	-	-	-	-		-	-	-	-	-	-	-	0	-	-
	1033							+											+		0																	
	0039		0	+	+	+		+		-		-		-		-		0	0	+	-	-	-	-		-	-		-		-	-	0	0	0			-
Degree and Continuing	0083							+											0		-	-																
	0093	+	-	+	+	0		+		-		-	-	-		-		-	0	0	-	-	-	-		-	-		-		-	-	0	0	0			-
Interruption and no degree	0103				0			+											0		0	0				0	0											
	0105							0											0		0	+																
	0106		0	-	-	0		-		0				0		-			0	0	+	0	+	-		0	0		0		0	0	0	0	+			0
	0107				0			-								-			0		+	+		-		-	0		0		-	0		+				0
	0109				-			-		0				0		0			0	0	0	0		-		0	0		0		0	0		+				0
Delay and no degree	1001		0	-	-	0		-		+		+		0		+			-	0	0	+	0	0		+	+		+		-	0	0	0	0			0
	1002				-			-						0		0			0		+	+		0		0	-		0		0	+		0				0
	1003				-			-											0		+	+				0	-				0							
	1009							-								0			0		+	0				+												0
Delay, interruption, and no degree	1106							-											0		0	0				0												
	1109				-			-											0		0	0				0	0				0							

NOTE: Pathway codes are presented in table 4.1.

KEY: + = significantly greater than expectation; - = significantly less than expectation; 0 = no difference from expectation; Blank = insufficient frequency to evaluate. ($p \leq .05$).

TABLE 5.2

TRANSITION PATTERNS BY MOST RECENT JOB
(DIRECTION OF DIFFERENCES)
CLASS OF '72

		Professional/Technical							Craft/Skilled										White Collar						Operatives					Service						Farm	Laborer
		Computer	Eng. Tec.	Engineer	Health Pro.	Health Tec.	Misc. Tec.	Professional	Apparel	Construction	Apprentice	Electrical	H. Equipment	Inspector	Mach TOM	Mech. Rep.	Other	Sk. Equip.	Manager	Sales	Clerical	Secretary	Office Mach.	Homemaker	Construction	Mach.	Other	Painter	Trans.	Clean	Food	Health	Pers.	Pri. Hh.	Prot.	Farm	Farm Lab	Laborer
No postsecondary	0000	-	-	-	-	-	-	-	+	+	+		+	+	+	+	+	+	-					+	+	+	+		+	+			-	-		+	+
Traditional pathway, no degree	0001		-	-	-			-		+	-				+	+	-			-		+	+	+				+		-	+	+	-	-	+	+	
	0002	-	+		-	-	-	-	-		+	-	+		-		+			+			+	+	-		+	+	+	-		+	+	-	-	+	+	
	0003			-	-	-	-						+		-		+						+		+		-			-			-	-		+	+	+
	0006	-		-		+	+	-	-	+	+	+			+			+	+	+			+												+	-	
	0009	-		-		-	-				-	+					+			+			+		-	-		+		-			-		+	-	+
Vocational degree	0011	+	+		+	+	+	-	-	-	+	+	-	-	-	+	+	-		-	-		+	-	-					-	-				+	+	
	0019		+	-	+	+	-	-	-		-		-	-	+					-	-		+	-		-	-	-		-	-	+	-	-	+		-
	1011	-	+		-	+	-	-	-		-	+	+	+	+	+	-	+		-	-	-	+	-	-	+	+	-		-	+		-	-	-	+	-	-
Community college degree	0022		-		+	+	-	-	-	-	-	-	-			-	-	-		+	+	+	+	-	-	-		-	-	+	-	-	+		-	-	
	1022	-	+	-		+	-	-	-	-	-	-	-	-	-	-	+	+	-	-			-		+	-	+	-	-	-	+	-	-	+	-	+	
	0029		+	+	+	+	+	-	+	-	-	-	+	+	+	-	-	-				+		-	-	-	-					-	-	+			
Four-year degree	0033	+		+	+	+	-	+	-	-	-	-	-	-	-	-	-	-	+	+		-	-	-	-	-	-	+	-	-	-	-	-		-	-	
	1033	-		+	-	-	-	+	-	-	-	-	-		-		-	-	+			-	-	-	-	+	-	-	-	-	-	-	-	+	-	-	
	0039	+		+	+	+	+	+		-	-	-	-	-	-	-	-	-		+		-	-	-	-	-	-	-	-	-	-	-	-			-	-	
Degree and Continuing	0083	+	-	+	+	+	-	+	+	-	-	-	-	+	-	-	+	-		+	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	
	0093	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	+		-	-	-
Interruption and no degree	0103	+	+	+		+	+	+	-		-	-	-	-	-	-	-	-					+			-				-	-	-			-	+	
	0105	-	+	+		+	+		-		-		-		+		-	-	-			+	+	-	-		-	-	-	+		+	+	+	+	-	
	0106			-	-	-	+				+	+	+				-	+					+	-				+		+		+						
	0107	+	+		-	+	+	-	-			+	-		-	-	-				+	+	+	-	+	-		+		+		+	+	+	-	+		
	0109			-	-	+	-		-		-		-		-	+							-				-			-	+	+	+	+	-	-	-	
Delay and no degree	1001	-	-	-	-			-	-	+	+	+				+	+	+					+		+	+	+	+	+	+	-	+			-	+	
	1002	-		-	-			-	-	-							-	-		-	+	+	+		-					+								
	1003	-		-	-	-		-	-	-	-		+	+	-		-				+			-	+		-		+		+	-					+	
	1009			-	-	-	-	-	-	+	-		+	-	-				-	+	+			-	+	+		-	+			-	-			+	+	
Delay, interruption, and no degree	1106	+		-	-		-	-	-		-		-	+	+		-			-		-		-		-		+		+	+	+	-	-			
	1109	-		-	-	-	+	-	-	-	+	+	-		-		-	-		-			+		+		+	+	-		-	+	-	-	-			

NOTE: Pathway codes are presented in table 4.1.

KEY: + = greater than 4/3 if expectation; - = less than 2/3 of expectation; blank = no difference from expectation.

standards for entries but that is more descriptive. Table 5.2 shows whether the proportion of respondents actually in a cell is less than two-thirds or more than four-thirds of the proportion predicted to be in the cell if occupation and transition pattern were unrelated. Entries in this table do not permit significance statements. However, they facilitate interpretation of the relationship between transition pattern and occupation.

These tables confirm the general expectations one would have that professional/technical occupations are dominated by those people who have university degrees, while those with no post-secondary education are represented predominately in blue-collar craft and operative and in lower-skill service jobs. One striking aspect of table 5.2 is that there are no occupations within either the craft or service categories for which students with four-year degrees are found in larger proportions than they appear in the full sample. Protective service and a couple of craft occupations are more likely than other occupations to draw people from among those patterns with the university degree and some continuing education. Community college degrees lead to frequent employment in some professional/technical occupations, but that is most frequent when the transition pattern sequence includes those who may have attended universities at some time. Thus, although a two-year degree may meet necessary conditions for access to some professional/technical jobs, it is usually not sufficient except in some health-related positions. Community college completion apparently is sufficient for entry into numerous sales and clerical occupations, although the differences for clerical jobs are not statistically significant.

Earning only a vocational degree provides access to several professional/technical and craft occupations. Computer-related occupations, engineering technicians, health technicians, and some lower-level health professional positions draw a relatively larger fraction of their practitioners from vocational degree holders, although the absolute numbers are not large enough within this sample to make significant statements about most of the cells in the vocational degree/professional or technical occupation block of the table. Vocational degree holders are also more likely to be found in electrical craft, mechanical repair, and other craft/skilled positions or in craft apprenticeship positions than would be expected purely by chance. Again, however, the absolute frequencies preclude significance statements about most combinations. Vocational degrees do seem to reduce the chances that people will work in sales, most operative, most service, and laborer positions.

Among those people who do not earn degrees, the presence of interruptions or delays seems to be associated with differences in occupations. Those people who follow pathways with interruptions but no delay are more likely than expected to be in professional/technical occupations, whereas those with a delay

but no interruption are less likely than normal to be in professional/technical positions. Among those who start post-secondary education without delay, interruption is positively associated with service employment and negatively associated with craft employment. People who experience interruptions are somewhat less likely to be employed in laborer jobs.

One can also approach the relationship by asking from which pathways a particular occupational group or set of occupational groups tends to draw its participants. Let us focus on the technical or skilled craft positions, since these are the positions identified most often as critical to economic recovery and future growth. Computer-related occupations draw very heavily from those with university degrees, regardless of delay or interruption, although immediate pursuit of and attainment of a vocational degree shows a positive (but not statistically significant) association with employment in this area. Both engineering and health technicians often come from vocational schools, though the occupations also draw from the pool of nondegreed respondents who attend four-year institutions with interruptions. Electrical craft and mechanical repair occupations also draw frequently from these same two groups of pathways. Engineers are predominantly drawn from those with four-year degrees. Health professionals of different levels draw from all the degreed pathways.

The results suggest that all three levels of postsecondary educational institutions can contribute to improving our ability as a society to compete in a world where technology develops rapidly. Four-year degree pathways are those most likely to lead into professional or technical jobs. But two-year and vocational schools also contribute substantially toward preparing youth for many professional or technical positions (especially in the health area) and for a variety of skilled craft positions. Any of these institutions can be chosen by young people aspiring to high level positions such as these. For some occupational groups, a specific pathway is almost a prerequisite. But for finding employment at this general level of skilled, responsible, and demanding positions, the completion of a program (as evidenced in the receipt of a credential) is at least as important as the choice of type of institution to attend.

Formal Training Programs

Formal education (narrowly defined) is not the only route to skilled and responsible jobs. Experience and outstanding performance in lower-level jobs may, in some cases, lead eventually to employment in the more demanding occupations. But in most cases, formal training of some kind is necessary (if not always sufficient) for the kind of advancement that most people seek. We would expect this to be true especially for people whose

formal education ended with high school graduation. Thus, we asked these questions:

- What types of nonschool training are associated with each transition pattern?

- Among those people who have no postsecondary education, how frequent is each type of nonschool training?

The types of training identified were on-the-job training (OJT), registered apprenticeship, government-sponsored (Neighborhood Youth Corps, CETA, etc.), military, correspondence courses, and other training. The summary of training experiences reflected in tables 5.3 and 5.4 was constructed to show the latest training program reported by each respondent. The training reported was classified hierarchically. OJT, registered apprenticeship, government-sponsored training, and military training were identified with equal priority, and if a respondent reported more than one of those programs, that person was classified in the table as having "multiple primary" training programs. Respondents were identified as having taken other training or correspondence courses only if they never reported any other kind of training throughout the entire seven-year period.

The overall incidence of training among the Class of '72 sample is surprisingly small when compared to the reports of extensive training published by the American Society for Training and Development (ASTD) (Carnevale and Goldstein 1983). Less than one-fourth of all respondents reported receiving some kind of training other than formal education within the seven-year period from 1972 through 1979.

The dominant form of training reported for the Class of '72 is OJT. It was found more than five times as often as any of the other categories. Even then, however, it was reported by only about 12 percent of the sample. Registered apprenticeship was reported by itself by only about 1 percent of the sample, though some of the 2.6 percent classified in multiple training programs took part in the apprenticeship programs. The lack of training in the no-postsecondary group is even more pronounced in the NLS Youth data. But that would be expected because the NLS Youth respondents had less time to take a training program than youth in the Class of '72 data.

Only a few relationships between training experiences and transition pattern emerge from these data. The two sets of transition patterns least likely to report any kind of training were the no-postsecondary pattern and those patterns that led to a university degree. Less than 20 percent of respondents in those patterns received training. The set of transition patterns most likely to receive some form of training were those with both

TABLE 5.3

MOST RECENT TRAINING PROGRAM BY TRANSITION PATTERN
(PERCENTAGE DISTRIBUTION WITHIN PATTERN)
CLASS OF '72

		None Reported	OJT	Registered Apprenticeship	Government Sponsored	Correspondence Only	Other Only	Military	Multiple Primary
No postsecondary	0000	82.3*	11.4	0.5*	0.6*	1.1*	0.8*	1.2*	2.1
Traditional pathway, no degree	0001	74.2	13.2	2.3*	2.1	1.1	2.9	1.2	3.1
	0002	79.2	15.7	0.4	0.8	0.0	0.8	0.5	2.6
	0003	81.4	11.6	0.6	0.9	1.2	1.8	0.8*	1.6
	0006	78.6	12.5	2.0*	0.9	0.5	0.8	1.5	3.2
	0009	71.4	14.6	1.3	2.5*	1.2	3.0	2.3	3.7
Vocational degree	0011	72.7	14.7	1.8	1.7	2.0	3.3	0.5	3.3
	0019	71.4	17.5*	0.7	1.6	2.4	1.5	1.9	3.1
	1011	69.4	11.2	1.0	11.5*	1.3	1.3	2.1	2.2
Community college degree	0022	79.1	12.0	1.6	2.5	0.4	2.2	1.2	1.0
	1022	80.1	12.2	0.0	0.0	0.0	3.8	0.0	3.6
	0029	77.3	12.6	0.7	0.0*	1.8	4.0*	1.0	2.5
Four-year degree	0033	86.9*	7.6*	0.5	0.8	1.2	1.9	0.4*	0.8*
	1033	86.8	3.6*	1.2	3.3	1.8	0.9	2.2	0.0
	0039	81.4	8.2*	1.0	1.3	2.3	2.6	0.7*	2.4
Interruption and no degree	0103	79.6	12.8	0.0	1.1	0.6	1.7	2.7	1.6
	0105	76.1	8.6	0.8	1.2	3.0	3.3	4.9*	2.1
	0106	78.5	10.0	2.0*	1.5	1.9	0.9	2.1	3.0
	0107	72.1	11.9	0.7	2.4	2.8	2.6	3.6	4.0
	0109	61.5*	16.1*	0.6	1.9	3.7*	2.5	10.6*	3.1
Delay and no degree	1001	64.9*	15.5*	2.0*	1.8	2.9*	3.2*	4.6*	5.1*
	1002	80.3	10.9	0.1	1.0	1.4	1.4	2.2	2.6
	1003	76.3	12.0	0.0	2.6	3.0	0.8	2.6	2.7
	1009	66.0*	12.6	1.1	0.9	2.7	3.6*	5.9*	7.1*
Delay, interruption, and no degree	1106	64.8	13.9	0.5	3.6*	2.2	1.2	8.2*	5.7*
	1109	58.0*	13.0	1.5	2.2	3.9*	1.5	14.2*	5.7*
All respondents (n = 16,450)		77.8	11.7	0.9	1.3	1.7	1.9	2.3	2.6

NOTE: Pathway codes are presented in table 4.1.

*Probability $\leq$ .05 that the observed percentage would occur by chance. A chi-square test with 1 degree of freedom was calculated separately for each cell.

TABLE 5.4

POSTSECONDARY TRAINING BY TRANSITION PATTERN
(PERCENTAGE DISTRIBUTION WITHIN PATTERN)
NLS YOUTH

	None	OJT	Apprenticeship	Other	n
No postsecondary	92.5	4.6	1.8	1.1	2481
All other patterns	88.5	4.4	1.5	5.7	4579

delay and interruption. The most frequent type of training, OJT, was received with about equal frequency by followers of all transition patterns except those who received university degrees. Registered apprenticeship was most popular among those people who followed patterns involving attendance at vocational schools, whether or not a degree was obtained. Registered apprenticeship was also popular among those who followed regression patterns, some of which may have involved attendance at vocational schools. This result would suggest that on the average across the country there is relatively close cooperation between postsecondary vocational schools and the business and labor organizations that manage apprenticeship programs. Military training was received most often by those who followed patterns reflecting delays, interruptions, or both delays and interruptions. This result may be more a consequence of the definition of delay and interruption than of the fact that military training leads to more frequent delays or interruptions in subsequently pursuing postsecondary programs.

We may summarize this brief look at training by noting four principal results. Some policy implications of those results are outlined in chapter 6. First, the overall frequency of formal training reported in these data seems to be less than research by ASTD would have led us to expect. Second, formal OJT is the dominant type of formal post-school training that workers receive. Five times as many respondents report it as reported any of the other categories of training types. Third, the frequency of formal training is even lower among those respondents who report no postsecondary education at all than it is in the rest of the sample. This result suggests that formal training may be a supplement to postsecondary education, but it is not a substitute for education, at least as employers currently operate in the United States. Finally, there is some evidence that military obligations in the early 1970s may have had a disruptive effect on completion of pathways. But that issue would require a much more intensive look than we could give it here. Under current conditions, the effect of a military draft on educational development beyond high school is a moot question.

The Preparatory Role of Two-Year Colleges

An issue that has attracted considerable attention recently is the question of whether or not community colleges are able to provide the means for less academically well prepared or inclined students to prepare themselves to compete at the four-year college or university level.* Breneman and Nelson (1981) have argued that they have not. If community colleges were performing

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*Clearly this is not the only function of community colleges.

this function well, Breneman and Nelson hypothesize, the likelihood of completing a four-year degree should not depend (other things being equal) on whether one starts postsecondary education at a community college or at a university. However, if community colleges were not performing this function well, then among students aspiring to a four-year degree, the percentage who obtain four-year degrees should be smaller among those who start at community colleges than among those who start at four-year institutions. The community college experience may discourage aspiring students from continuing, or it may not be providing instruction that is good enough to raise the students' skills to a competitive level. In either case, the community colleges would be failing to achieve one of their goals.

We cannot address this issue fully in this report. But the pathway concepts are relevant to it and, with slight modifications, may shed some light on it. Tables 5.5 and 5.6 contain the relevant data.

As noted in chapter 1, the Breneman and Nelson analysis was limited in regard to the length of time considered and it did not consider the full pathway in contrasting experiences of two-year and four-year students. The data presented here use an additional follow-up beyond those available to Breneman and Nelson, and those data reflect the entire pathway. The analysis technique employed here is less sophisticated than Breneman and Nelson employed because building behavioral models of these choices is beyond the scope of this phase of study.* Although the comparisons do not control for all influences, they do control for what are probably the two most important determinants (or at least correlates) of four-year degree completion: academic achievement in high school and educational aspirations.

Selection of the subsamples for making this comparison requires some careful thought. Even among those who aspire to graduation from a four-year institution, those students who first attend two-year institutions may, on the average, be less academically able than those who start at four-year institutions. The data suggest that if this speculation is true, the community colleges do not, for the average student who aspires to a university degree, overcome those deficiencies in ability. If the differences in average ability are fundamental, it may be that no institution or program of study could compensate for or eliminate the differences. The differences would then be inherent. This proposition is roughly tested in tables 5.5 and 5.6 by controlling for high school achievement in addition to educational

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*As suggested by our remarks in chapter 1 on the Breneman and Nelson results, specification and estimation of such a model is a formidable task.

TABLE 5.5

TYPE OF DEGREE BY POSTSECONDARY ATTENDANCE AND CLASS RANK
COLLEGE DEGREE ASPIRANTS AS HIGH SCHOOL SENIORS
NLS '72

	Degree by Class Rank: Upper Half (Percent of Row)					Degree by Class Rank: Lower Half (Percent of Row)				
	(n)	None	Vocational/ 2-Year Only	4-Year	4-Year Only	(n)	None	Vocational/ 2-Year Only	4-Year	4-Year Only
Attended any postsecondary	(2,814)	32	8	60	55	(2,423)	56	12	32	28
Start at: vocational	(185)	58*	25*	16*	9*	(347)	76*	19*	6*	4*
Start at: community college	(84)	85*	8	8*	5*	(189)	83*	11	6*	4*
Start at: university	(2,499)	27*	6*	66	61*	(1,776)	48*	10	42	37*
Attended community college	(555)	46	21	33	22	(787)	65	19	16	11
Start at: vocational	(46)	45	38*	17*	2*	(83)	72	22	6*	3*
Start at: community college	(84)	85*	8*	8*	5*	(189)	83*	11*	6*	4*
Start at: university	(404)	36*	22	41	28*	(464)	55*	22	23	16*
Attended community college and University	(503)	41	23	36	24	(652)	59	21	19	13
Start at: vocational	(46)	45	38*	17*	2*	(83)	72	22	6*	3*
Start at: community college	(38)	71*	13	17*	11	(78)	62	23	15	9
Start at: university	(404)	36	22	41	28	(464)	55	22	23	16
Attended only university	(1,883)	24	2	74	70	(1,129)	43	5	51	48

NOTE: Total n for each attendance category includes categories not shown separately (usually starting at an undefined institution). Except for rounding error, None, Vocational/2-Year, and 4-Year columns add to 100 percent in any row. On any line, the fraction of respondents earning Vocational/2-Year degrees is the sum of the Vocational/2-Year Only category and the difference between 4-Year and 4-Year Only categories. A * shows cells for which a chi-square test shows significantly at .05 level more or fewer cases than would be predicted by chance alone within that attendance category (such as attended any postsecondary).

TABLE 5.6

TYPE OF DEGREE BY POSTSECONDARY ATTENDANCE AND APTITUDE TEST SCORE
COLLEGE DEGREE ASPIRANTS AS HIGH SCHOOL SENIORS
NLS '72

	Degree by Test Score: High (Percent of Row)					Degree by Test Score: Middle or Low (Percent of Row)				
	(n)	None	Vocational/ 2-Year Only	4-Year	4-Year Only	(n)	None	Vocational/ 2-Year Only	4-Year	4-Year Only
Attended any postsecondary	(2,737)	33	7	60	56	(2,956)	54	13	33	28
Start at: vocational	(166)	65*	18*	17	11*	(381)	70*	23*	6*	3*
Start at: community college	(78)	77*	12	11	10*	(200)	85*	9	6*	3*
Start at: university	(2,444)	28*	6	65	61*	(1,905)	46*	11	43	37*
Attended community college	(535)	46	20	34	24	(849)	64	20	17	10
Start at: vocational	(44)	56	27	17	7*	(88)	64	29*	7*	2*
Start at: community college	(78)	77*	12	11	10*	(200)	85*	9*	6*	3*
Start at: university	(398)	37*	21	41	29*	(503)	54*	22	24	15*
Attended community college and University	(492)	42	22	36	26	(708)	58	22	20	12
Start at: vocational	(44)	56	27	17	7*	(88)	64	29	7	2*
Start at: community college	(40)	58	20	22	19	(81)	69	16	14	7
Start at: university	(398)	37	21	42	29	(503)	54	22	24	15*
Attended only university	(1,846)	24	2	73	70	?	41	5	53	49

NOTE: Total n for each attendance category includes categories not shown separately (usually starting at an undefined institution). Except for rounding error, None, Vocational/2-Year, and 4-Year columns add to 100 percent in any row. On any line, the fraction of respondents earning Vocational/2-Year degrees is the sum of the Vocational/2-Year Only category and the difference between 4-Year and 4-Year Only categories. A * shows cells for which a chi-square test shows significantly at .05 level more or fewer cases than would be predicted by chance alone within that attendance category (such as attended any postsecondary).

aspirations. The tables partition the sample by two indicators of high school academic achievement, class rank and composite aptitude test scores (for tests taken as seniors).

The data generally reinforce the Breneman and Nelson position. Among students who expect as seniors to earn a four-year college degree and who subsequently attend any postsecondary institution, those who start at four-year institutions are significantly more likely than those who start at other institutions to achieve their goal of at least earning the four-year degree. Those who start at four-year institutions are between four and six times as likely as those who start at two-year institutions to earn a four-year degree within seven years of their high school graduation. They are more than twice as likely to earn any kind of degree. This relationship holds with controls for achievement and aspirations. Interestingly, among students who ranked in the top third of their high school class, those who start vocational, business, or trade schools are more likely even than those who start at two-year institutions to earn the four-year degree. Even students who started at four-year institutions but at some point attended two-year institutions were more likely than those who started at two-year institutions to earn four-year degrees.

One might argue that the comparison just offered is unbalanced. As noted previously, the lower proportion of community college starters who achieve four-year degrees may be attributable in part to their academic preparation being too poor to allow them to gain admission to a four-year institution. That possibility can be controlled for by looking only at those students who attend both two-year and four-year institutions. The percentage in this subsample who earn four-year degrees after starting at community colleges is higher than for any of the other subsamples of community college starters, but it still is less than the fraction of degree earners among those who start at four-year institutions. Even considering only those students who start at four-year institutions but at some point attend two-year institutions, they are nearly twice as likely to get a four-year degree as are those within this subsample who started at two-year institutions.

Overall, these data from Class of '72 tend to support the Breneman and Nelson criticism that community or junior colleges serve poorly as stepping stones to a four-year degree for the less academically able students. It does not, of course, reflect on the other goals for which community colleges were established. But it does suggest that the progression paths that we have analyzed here that flow through two-year institutions to four-year institutions should be considered carefully by students, parents, counselors, and providers of financial aid before they are embarked upon. Either the vocational schools or the universities are likely to offer better chances to follow patterns that lead

to a credential. But this conclusion is tentative at best. A more rigorous investigation is planned for the next phase of this study.

The Utility of the Patterns

Because the conclusions reached above are quite tentative and are based on preliminary analyses using techniques that are not as rigorous as one would eventually like to apply, we will not repeat the conclusions here. Instead it is useful to note some of the problems as well as some of the advantages that these preliminary analyses suggest are associated with the use of the transition patterns as we have defined them.

The principal advantage of using the patterns is that they identify the key aspects of the postsecondary educational experiences of the respondents. The most troublesome omission is the lack of an indicator of postsecondary field of study. As the patterns were defined, they can be aggregated over any one of the concepts or any combination of the concepts to address relevant policy issues. For example, one can ask whether delays are more or less likely to impede getting a degree when they are accompanied by interruptions. Or one can ask whether all patterns involving attendance at four-year institutions are significantly different from all patterns involving attendance at only two-year institutions. Furthermore, the aggregation can be very flexible once each case is assigned to a pattern. Many different issues can be considered quickly with a relatively simple change in the aggregation of patterns.

When the patterns are used for analysis, however, two main problems seem to arise. First, analysis at the level of individual patterns is difficult. When analyzing occupations, for example, analysis at the patterns level tended to fragment the data, making it difficult to apply standard statistical techniques to many of the combinations of occupation and individual pattern.

Second, the consideration of issues raised by Breneman and Nelson highlighted a problem in the classification of individuals who attend more than one type of postsecondary institution. Our classification into progression, regression, or mixture sequences emphasized purposefulness and progressive intellectual development. But, in combining progression sequences with attendance at one type of institution (for example, combining 0035, progressions leading to a four-year degree, with 0033, four-year degree while attending only four-year institutions) and regression and mixture sequences with undefined sequences, some of those distinctions are lost. Moreover, for some policy issues (the Breneman-Nelson question is a good example), the specific types and sequences of institutions attended are the most important

concern. Our classification of sequences obscures that detail in the attendance sequence.

These problems suggest that future research involving the patterns should initially maintain the disaggregation into individual patterns at as fine a level as possible until preliminary examination of the data suggests the directions aggregation might usefully take. These preliminary analyses also suggest to us that our definitions of sequences may require some rethinking. It may be best to fragment the data still further so that aggregation of patterns may be more flexible. For instance, it may be best to divide the current mixture sequence into its components showing attendance at four-year and two-year schools, attendance at four-year and vocational schools, attendance at two-year and vocational schools, and attendance at all three types of institutions. Aggregation could come later in the analysis as the possible relationships to be emphasized begin to sort themselves out. It is this kind of question concerning pattern specification that will require some additional thought before proceeding with next year's research.

CHAPTER 6

THE PATHWAYS, THEIR FOLLOWERS, AND THEIR IMPACT

The data reviewed provided a large body of information about the kind and description of the pathways that are followed by the majority of young people who graduate from high school. The discussion of pathway impact is preliminary, however, because this phase of the study was limited to identifying and describing the pathways and those who follow them. There are three kinds of impact that may be addressed within this study; others will be the substance of the next phase. Those that may be addressed are the apparent sorting into the pathways by race, gender, high school achievement, and opportunity; the success of people who follow the various pathways in obtaining a credential; and the occupation into which the pathways lead.

One general conclusion that is immediately apparent is that there is no "average" pathway. The largest single group of pathways in the Class of '72 is not the most desirable if achieving a credential is the objective. (Over one-third of the respondents did not complete a degree after starting a pathway in postsecondary education.) This group is reduced somewhat in the NLS Youth, but perhaps because those who at the most recent interview were successfully continuing degree-leading pathways were counted as achievers of degrees. Thus there appears to be high importance for policy considerations in the large numbers of youths who begin but do not complete a degree leading pathway. Subsequent analysis of the labor market and other consequences of these uncompleted pathways will better inform the policymakers of the consequences of the selected pathways to these young people.

The two surveys used in the study differ in regard to the proportions of respondents successfully completing degrees or not engaging in postsecondary education at all, but it is safe to say that nearly equal proportions follow these two different routes (roughly one-fourth in each in the Class of '72 sample and one-third in each in the NLS Youth). Until the consequences of the pathways are determined, policy considerations must be limited to the possible sorting effects of individual characteristics into different pathways.

Among these, going to work is the predominate activity undertaken during interruptions, thus introducing a major sorting element, and one that characterizes a large proportion of the noncredentialing pathways. Working is consistent with the emphasis on economic factors as one of the major reasons for interruptions. There is little evidence, however, that interrupting education solely to have a family is a pattern any longer, and interruptions are similar for both sexes.

Opportunity

The opportunity to attend a nearby facility appears to increase the likelihood of following a pathway that includes such an institution. Those living in the West, an area well supplied with community colleges, most often include such schools in their pathways and experience the results of such pathways. Although lack of an available school is not often cited in the entire sample as a reason for not pursuing postsecondary education, it may be relevant in some cases. In particular, small communities have more than their share of those respondents with no postsecondary education, perhaps reflecting the lack of opportunity. Vocational pathways are also more frequently followed in small communities. In contrast, four-year college attendance is relatively more frequent for those in the large cities than for the sample as a whole.

The interpretation that differences in pattern by community size reflect lack of available facilities in small communities would be consistent with infrequent mention of availability if the people are accustomed to the lack of available facilities and adjust their aspirations accordingly. That is, lack of facilities may lead people in small communities to convince themselves early that they do not need education beyond high school or that their priority goal should be to earn money as soon as possible.

Another aspect of opportunity is socioeconomic. People from low SES backgrounds are more likely not to undertake postsecondary education. In contrast, those with high SES rarely fall in that pathway and are overrepresented in the four-year college pathways. Vocational pathways are also not the choice for the high SES group. The community colleges seem to serve proportionately more of the middle SES group.

The presence of dependents while the respondents were seniors in high school did not have one of the traditionally expected effects. While having dependents was associated with greater proportional frequency in the no-postsecondary education path, men and women were affected about equally. Also, among respondents who had dependents while in high school, the proportion who followed four-year college pathways were similar for both sexes. These proportions were less than expected if having dependents had no impact. But dependents do appear to confine those responsible for them to a more limited number of pathways. The vocational and community college pathways seemed to serve them according to expectations.

Gender and Race/Ethnic Origin

Gender has a variety of influences on pathway chosen. Within gender, race has some effect, but the race differences are

similar for both men and women. Vocational school and four-year college pathways show differences in selection by men and women. Delay in entering appears less damaging for men in terms of completion, but this effect is neutral for black men. Community college frequently does not lead to degrees for Hispanic men, and relatively few Hispanic women received four-year degrees. White men are quite likely to continue education after a degree, while white women do not deviate from expectations in any pathway. Thus, the data produced in this study illustrate some of the mechanisms through which the effects of race/ethnic origin operate for differential consequences. These consequences appear less favorable for minorities than for the majority.

Aspirations and Locus of Control

Although high aspirations are frequently unrealized, those who hold them are much more likely to follow a pathway that leads to a credential. If aspirations are below some level of post-secondary educational attainment, then it is unlikely that the higher level will be reached. Therefore, high aspirations should be encouraged if maximum individual development is to be realized. Those who aspire to higher goals, and who also begin a pathway that leads toward the achievement of that aspiration are more likely to express confidence in their ability to influence what happens to them, as reflected in higher scores on the scale of locus of control. Those who are undecided or who have chosen a lower level of educational attainment tend to attribute the control of their lives to forces outside themselves.

Who Influences the Educational Decision?

Both aspirations and locus of control are internal perceptions of individuals, perceptions that may be influenced by others. Among those others are parents, peers, teachers, counselors, and older friends. Parents and older friends have some positive influence on the decision to enter four-year pathways. Teachers are seen as influencing such pathways, but not as much as parents. Pathways with lower-level termination points are more influenced by peers and less influenced by parents and teachers. However, the strongest reported influence upon the decision is that of each individual. Nearly three-fourths of the sample reported that they had a very important role in their decision. But those who entered early terminating pathways were less likely to report a high level of self-influence.

Achievement and High School Curriculum

Entry into the various pathways differs in pronounced ways in association with achievement in high school and with high

school curriculum. In general, the higher the achievement level in high school, the higher the educational level completed. Those who follow university pathways but do not achieve degrees are also very close in high school achievement to those with two-year degrees. The next highest average is obtained by those who complete a vocational degree. Those who attempt no postsecondary education are the lowest in high school achievement.

The curriculum followed in high school shows similar patterns. Vocational students are more likely than those from other curricula to attend postsecondary vocational schools. In the Class of '72 data, general students are more likely than vocational students to enter two- or four-year pathways. This pattern is replaced in the NLS Youth data by a trend on the part of general students to dominate in the no-postsecondary and no-degree pathways. The high school vocational students continue, however, to be the predominate completers of vocational postsecondary degrees. In both samples, following academic high school programs lead to the more extended postsecondary pathways.

Occupation and Training

One set of consequences of the pathways that may be considered in this study is the occupations into which the pathways lead. As expected, the lower-skilled craft and service jobs are predominantly the outcomes of the no-postsecondary pathway. Two-year degree pathways lead frequently into professional/technical occupations, but particularly so if there is at least some four-year college work in the sequence. Vocational degree pathways often lead to professional/technical and craft occupations, including engineering technician, health technician, and some lower-level health professions, and computer-related professions. An alternative route for both health and engineering technicians, in addition to the vocational pathway, is a four-year interrupted program that does not result in a degree. The higher-level professional/technical positions are predominantly the result of four-year pathways.

The primary form of training is on-the-job training (OJT). Although it is five times more frequently reported than any other form of training, it still is reported by only about 12 percent of the population. Unfortunately, it is reported slightly less often by those who might need it most, the no-postsecondary group. Training therefore appears to be an area in need of attention, both from the standpoint of both providing human service and improving the nation's industrial base.

Postsecondary Specialization

The pathways are also differentiated in expected ways among the fields of study or specialization. Three interesting exceptions are education, engineering, and other professions. Those who specialize in education frequently take postdegree work not necessarily leading to further degrees. Engineering specialists frequently follow mixed-sequence pathways and those with interruptions. Postdegree work understandably characterizes many other professions. Business specialization shows the greatest variety of pathways. It is frequently not the first choice by those who pursue it but rather serves as a fall-back specialty or as an aid in advancement in another field.

Immediate Recommendations

This paper began with a statement about policymaking in a society that values freedom of choice. It functions through encouraging individuals to choose an efficient course of action leading to a desired goal or outcome. The interpretations of the findings reported herein will be influenced by the idea embodied in that statement. The interpretations will be limited, however, by the preliminary nature of the work reported here. The major ramifications of the consequences of following the different pathways have not yet been determined. Nevertheless, there are some obvious areas that call for immediate policy attention.

Post-High School Training

Nearly one-fifth of the members of nation's population in the early working years report that they receive virtually no additional formal job training after high school, either on the job or elsewhere. They are also the group that reports the least sense of control over their own lives. The kinds of jobs they hold are among the least stable and least rewarding. This share of the population needs to be encouraged to expand its skills, improve its sense of efficacy, and thereby increase its own well-being. Federal, state, and local policymakers must reaffirm longstanding commitments to this goal and look for ways to bring about progress in these directions.

Incomplete Pathways

Another area for policy consideration is the number of young people who start a pathway leading to a degree but do not complete it. Depending upon which sample one examines, between one-fourth and one-third of the young adult population falls in this category of pathways. The consequences of these pathways have not been examined in the research reported here. That will be

the subject of the next phase of this research. However, other studies have found, and there is at least some evidence here, that job status is a partial function of obtaining a credential and, therefore, dropping out before completion may well be a detrimental event. In addition, the reasons for dropping out may reflect a traumatic and defeating experience for the young person, with possible long-term detrimental consequences. Therefore, policymakers should consider ways to reduce the incidence of false starts while preserving the utilities of nondegree postsecondary learning directed toward other goals.

Transition Decision Making

This recommendation suggests three other areas in which policymakers have an essential role. The first is the quality and kind of counseling available to students prior to making their decision regarding transition pathways. Relatively few students report being influenced by counselors in their high schools. The reasons are not well documented, but the counseling system is apparently not working according to expectations. In a context of maximum individual choice, the counseling system should include incentives toward maximizing the information available to the student and assisting each student in interpreting that information and incorporating it into the transition decision.

Those students who report that friends exert a powerful influence on their postsecondary plans pose an interesting problem for any policy that attempts to influence those choices. It seems to suggest that one of the best ways to influence any youthful person is to influence other young people. This prescription is beset by the familiar problems of tautology: it appears that the best way to influence young people is, understandably, to influence young people. Perhaps the message is that it is unnecessary for policy to reach all young people in any one environment. As with recent attempts to break the cycle of peer pressure on drug involvement in high schools, the best approach to influencing postsecondary choices among the bulk of students may be to influence the choices among the leaders within various groups. The problem with that approach is that it disregards the principle that individuals should make their own decisions and should be treated by school personnel as individual people, not as members of an undifferentiated group.

Attempts to influence college attendance decisions must be made early if the objective is to influence the decisions of most students. Nearly half of the sample said that its decisions on college attendance were made before or during the tenth grade. This fact implies (if it is replicated with more recent data) that if the objective of policy is to discourage people from attending traditional academic institutions and encourage them to

obtain an alternative postsecondary education, such encouragement must begin early. Nearly 80 percent of those who get university degrees reported that the decision to attend was made before or during the tenth grade. On the other hand, if policy seeks to encourage attendance or influence decisions, it must be recognized that a substantial fraction of students do not make up their minds until twelfth grade. It would appear that there is substantial room for marginal effects on the postsecondary decisions of this group.

For all groups of students, attempts to influence choices should be addressed directly to parents. Teachers and counselors have an influence, but for the majority of students they are less influential than parents; in particular, their influence is slight on those who aspire to experiences other than a university degree or to those with no aspirations at all for postsecondary education.

Program quality. A second area for policy consideration is the quality of program and instruction at the postsecondary level. In other studies, a frequently reported but inadequately documented cause of early pathway termination is poor instruction. Incentives that encourage instructional improvement, especially in the early postsecondary years, might very well pay off in reducing involuntary pathway termination.

Unanswered questions. The third area for policymakers to consider is the continuing lack of appropriate information on certain critical issues. We do not know why many young people delay decisions in personally costly ways, follow a pathway that does not produce a credential, or do not use counseling resources. We only know that these things happen. We also do not know what the outcomes of the transition pathways are in most areas of interest. Consequently, policymakers need to provide the necessary incentives to search for answers to these and other relevant questions. Support is particularly important at the federal level, because most of these questions need answers that are generalizable to the nation.

Equity. Policy has already addressed the inequalities that seem to be associated with gender, race, ethnic origin, and SES. These data show that as far as transition pathways are concerned, the inequities still exist. Until the consequences of the pathways in terms of labor market effects and general quality of life are known, specific recommendations for changes in policy do not appear to be appropriate. It is evident, however, that the policies cannot be simple but must attack the problem from a variety of perspectives. For example, the sorting effect on pathway followed is different for Hispanics than for blacks. Further study of this question is needed.

It must be emphasized again that these recommendations are based upon preliminary and tentative findings. The next phase of the study may well show that the simple bivariate tables conceal rather than reveal some important consequences of following certain pathways for certain groups of people. These recommendations will be carefully reviewed when that study is complete.

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APPENDIX

TABLE A-1

NUMBER OF INTERRUPTIONS BY PATTERN AND REASON
RESPONDENTS WITH ANY POSTSECONDARY EDUCATION
CLASS OF '72

Transition Pattern	Not Identified	Not In Labor Force		Unemployed		Employed		Military	Total	Percent
		Homemaker	Other	Homemaker	Other	Homemaker	Other			
0011		2				2	15		19	0.3
0019		5	2	2	11	18	135	10	183	3.0
0022		1	2	2	3		23	1	32	0.5
0029		9	7		7	27	155	5	210	3.5
0033		4	21	3	20	25	330	2	405	6.7
0039		4	16	1	13	21	255	7	317	5.3
0083		1	8		2	7	62	4	84	1.4
0093		6	27	3	39	53	463	17	608	10.1
0101	4	4	4	1	7	2	104	6	132	2.2
0102	2	2	2		4	3	38		51	0.8
0103	4	9	19	2	6	13	224	5	282	4.7
0105	1	4	6	6	8	7	142	16	190	3.2
0106	3	28	42	5	40	52	569	31	770	12.8
0107	4	12	21	4	24	32	330	27	454	7.5
0109	10	17	28	6	34	25	353	85	558	9.3
0111			1		2		2		5	0.1
0119		3	5	1	8	5	54	4	80	1.3
0122			2			1	6		9	0.1
0129		2	5		3	5	63	10	88	1.5
0133		2	13		3	2	87		107	1.8
0139		5	14		5	6	137	4	171	2.8
0193		3	11	1	5	6	61	2	89	1.5
1011							1		1	0.0
1019					1		10		11	0.2
1022					1		1		2	0.0
1029			2		2		8		12	0.2
1033			1		1		11		13	0.2
1039			1		2		9		12	0.2
1093						1	12	2	15	0.2
1101	46	7	1	1		9	43	7	114	1.9
1102	19	4	2		2	2	36		65	1.1
1103	14	1	2		2	7	27	1	54	0.9
1105	35	6	1	2	2	17	59	23	145	2.4
1106	30	6	10	2	15	16	114	24	217	3.6
1107	37	3		1	4	6	69	8	128	2.1
1109	60	10	13	2	13	25	119	71	313	5.2
1111	2						1		3	0.0
1119	8		2		3		3		16	0.3
1122	4		1				1	1	7	0.1
1129	4	2		1		1	7	3	18	0.3
1133							2		2	0.0
1139	2	1	5	1		1	12		22	0.4
1193	1						2		3	0.0
Total	290	163	297	47	292	397	4155	376	6017	100.0
%	4.8	2.7	4.9	0.8	4.9	6.6	69.1	6.2	100.0	

TABLE A-2

CENSUS CODES IN OCCUPATIONAL GROUPS
IN TABLE 4.33

Occupational Group	Census Code
Computer	3, 4, 5, 172
Professional	1, 2, 24-56, 86-145, 174-195
Health professional	61-76
Miscellaneous technical	163-173
Health technicial	80-85
Engineer	6-23
Engineering technician	150-162
Manager	201-245
Sales	260-280
Secretary	364, 370-372, 376, 391
Office machine	341-355
Clerical	301-340, 356-363, 365-369, 373-375, 377-390, 392-399
Other craft	401-404, 444, 501, 514, 525, 540, 545, 575
Apparal crafts	425, 542, 551, 563
Construction crafts	410, 415, 420, 421, 440, 445, 520, 522, 534, 546, 560
Heavy equipment operative	412, 424, 436, 455, 456
Painter	510, 512, 543
Mechanical repair	470-473, 475, 480-486, 492, 495
Skilled equipment craft	405, 413, 422, 426, 434, 435, 442, 443, 446, 453, 502, 503, 505, 506, 515, 516, 530, 533, 535, 550, 551

TABLE A-2 (Continued)

Occupational Group	Census Code
Inspector	441, 450, 452, 610
Electrical craft	430-433, 552, 554
Machinist/tool & die	454, 461, 561
Craft apprentice	411, 416, 423, 462, 474, 491, 504, 511, 521, 523, 531, 536, 562, 571, 572
Construction operative	601, 603, 614, 615, 640, 641
Transport operative	701-715
Laborer	740-785
Machine operative	611-613, 621, 622, 626, 635, 645, 650-653, 656, 660, 662-666, 670-674, 680, 681, 690, 692
Other operative	602, 604, 605, 620, 623-625, 630, 631, 633, 634, 636, 642-644, 661, 694, 695
Farmer	801, 802
Farm laborer	821-824
Cleaning service	901-903
Food service	910-916
Health service	921-926
Personal service	931-954
Protective service	960-965
Private household	980-992
Unknown	995